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HOOKER'S

ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,

OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

SIR DAVID PRAIN, C.M.G., C.I.E., LL.D., F.R.S.

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. X.

OR VOL. XXX. OF THE ENTIRE WORK.

PART I. 2901-2925, January 1910.
PART II. 2926-2950, January 1911.
PART III. 2951-2975, December 1911.
PART IV. 2976-3000, July 1913.

DULAU & CO., LTD.
37 SOHO SQUARE, LONDON.
1913.

Mo. Bot. Garden
1913

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ERRATUM

Tabula 2988, line 4 from top, *for* 1912 *read* 1911.

Spottiswoode & Co. Ltd., Printers, Colchester, London and Eton.

VOL. X.—PART I.] [JANUARY.

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M.S. del. et lith.

J.D. Hooker ancl.

TABULA 2901.

IMPATIENS REIDII, *Hook. f.*

BALSAMINACEAE.

I. Reidii, *Hook. f.* (*sp. nov.*) ; inflorescentia pedunculata, pedunculi pauciflori, pedicelli infra florem solum bracteati (basi ebracteati), floribus parvis, labelli calcare elongato gracile.

Herba elata, ramosa, fere glaberrima, grandifolia, parviflora, ramis gracilibus, ramulis summis et inflorescentia novella pubescentibus. *Folia* 5–18 cm. longa, alterna, petiolata, membranacea, elliptica vel obovata, acuminata, crenata setulis apicalibus, subtus glabra vel minute puberula, basi longe in petiolum 1–4 cm. longum sensim angustata, nervis utrinque 8–12 ; glandulae petiolares 2, majusculae, vel 0. *Pedunculi* 3–5 cm. longi, 3–4-flori, glabri vel puberuli, fructiferi elongati, stricti ; pedicelli 6–8 mm. longi, infra florem unibracteati, fructiferi 2–3 mm. longi ; bracteae setaceae, lineares, 3–5 mm. longae. *Flores* albi. *Sepala* 2, oblique ovata, acuta vel acuminata, 6–8 mm. longa, membranacea, puberula, 6–7-nervia. *Vexillum* oblatum, sub-bilobum, 10–13 mm. latum, costa paullo incrassata. *Alae* subsessiles, rectae, 1.5–1.9 cm. longae ; lobus basalis rotundatus ; distalis paullo longior, anguste dolabriformis, apice angustato obtuso ; auricula dorsalis angusta. *Labellum* 2–2.5 cm. longum ; limbus scaphiformis vel anguste infundibularis, alte ascendens, 9 mm. longus, acutus, in calcar gracile arcuatim incurvum attenuatus. *Filamenta* gracilia ; antherae parvae, didymae. *Ovarium* rectum, acuminatum. *Capsulae* lineares, 3–4 cm. longae, acuminatae, erectae, polyspermae. *Semina* oblonga, 4 mm. longa, tuberculata, castanea.

WESTERN HIMALAYA : Kumaon ; Kali valley, on the border of Nepal, alt. 1800–2100 m. ; and near Sala Durma, alt. 2400 m., *J. F. Duthie* and *J. R. Reid.*

A very distinct species, of which I have seen only two specimens—one in the Herbarium of St. Petersburg, the other in that of Edinburgh, both in flower and fruit and both collected by Mr. Reid, of the Bengal Civil Service, in company with Mr. Duthie.—J. D. HOOKER.

Fig. 1, part of inflorescence ; 2, sepal ; 3, standard ; 4, wing : 5, lip ; 6, stamen : 7, ovary ; 8, lowest pedicel with bract and capsule ; 9, seed. ***All except figs.*** **1** ***and*** **8** ***enlarged.***

M.S. del et lith.

J.D. Hooker anal.

TABULA 2902.

IMPATIENS JAESCHKEI, *Hook. f.*

BALSAMINACEAE.

I. Jaeschkei, *Hook. f.* (*sp. nov.*); species elata, ramosa, macrophylla, alternifolia, inflorescentia pedunculata, floribus majusculis breviter calcaratis.

Herba elata, glaberrima, grandifolia, caule gracile ramoso. *Folia* 10–20 cm. longa, alterna, petiolata, tenuiter membranacea, oblonga, acuminata, crenata setulis interjectis 0, basi in petiolum 2–5 cm. longum nudum vel anguste alatum angustata, utrinque 6–12-nervia; glandulae infra-petiolares 0. *Pedunculi* gracillimi, 5–10 cm. longi, apicem versus racemosim 3–5-flori; pedicelli filiformes, 1–2 cm. longi; bracteae lanceolatae, acuminatae, 4–6 mm. longae. *Flores* ad 2.5 cm. expansi, rosei (?). *Sepala* 2, oblique ovato-rotundata, paullo falcata, acuminata, inaequilatera, 6–7 mm. longa, membranacea, ad 7-nervia. *Vexillum* amplum, orbiculare, 1.8–2 cm. latum, apice bilobum, muticum, membranaceum, costa gracile. *Alae* 2.5–3 cm. longae, sessiles; lobus basalis rotundatus, basi late cuneatus; distalis paullo longior, dolabriformis, apicem versus rotundatus, angustatus; auricula dorsalis rotundata. *Labelli* limbus vexillo minor, saccatim infundibularis, basi in calcar incurvum breve tenue attenuatus, ore horizontale acuto. *Ovarium* lineare, acuminatum. *Capsulae* valde immaturae, erectae.

WESTERN HIMALAYA: The *Rev. R. Jaeschke* in Herb. Mus. Palat. Vindobon. no. 148134, e coll. Reichenbach f. Kumaon; Shink la, Kali valley, on the border of Nepal, alt. 2700–3000 m., *J. F. Duthie.*

No precise habitat of this noble species is attached to the specimens in the Vienna Herbarium, but it was in the district of Kangra (N. of Simla) *alias* Lahul, where my friend Mr. Duthie informs me that the Rev. R. Jaeschke of the Moravian Mission prosecuted his botanical researches.

In the absence of mature capsules the affinity of *I. Jaeschkei* is not obvious. In some respects it approaches *I. bicolor*, Royle, from which the lanceolate bracts, bifid vexillum and stamens distinguish it.—J. D. HOOKER.

Fig. 1, bract; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamens; 7, ovary. *All enlarged.*

M.S.del et lith

J.D.Hooker anal.

TABULA 2903.

IMPATIENS AITCHISONII, *Hook. f.*

BALSAMINACEAE.

I. Aitchisonii, *Hook. f. in Rec. Bot. Surv. Ind.* vol. iv. (1904), p. 9; herba annua, robusta, angustifolia, *I. Thomsoni*, Hook. f., bracteis linearibus capsulisque deflexis affinis, differt lobo basale alarum rotundato mutico, capsulis seminibusque multo majoribus.

Herba 30–60 cm. alta, erecta, robusta, glaberrima, floribus mediocribus, caule simplice vel ramoso. *Folia* 5–15 cm. longa, alterna vel apices versus ramorum conferta, petiolata, lanceolata vel ovato-lanceolata, acuminata, crenato-serrulata, basi in petiolum 1–4 cm. longum angustata, nervis utrinque 6–8; glandulae infra-petiolares minimae vel 0. *Pedunculi* folia suprema aequantes vel longiores, stricti, erecti, 3–5-flori; pedicelli 0.5–1 cm. longi; bracteae 6–8 mm. longae, filiformes, patulae, subpersistentes. *Flores* ad 2 cm. expansi, rosei, dorso aurei, labello purpureo maculato. *Sepala* 2, 5–6 mm. longa, late ovata, falcata, longe aristatim acuminata, basi subcordata. *Vexillum* orbiculare, ad 15 mm. latum, costa tenue cuspidata. *Alae* 1.2–1.7 cm. longae, sessiles; lobus basalis late oblongus, superne rotundatus, muticus; distalis paullo longior, erectus, late vel anguste dolabriformis, apice rotundatus; auricula dorsalis rotundata. *Labelli* parvi limbus infundibularis vel subcymbiformis, in calcar rectum limbum subaequans attenuatus, ore horizontale acuminato. *Filamenta* brevia, filiformia; antherae parvae. *Ovarium* clavellatum. *Capsula* 1.5–2.2 cm. longa, anguste clavata, apice rotundata apiculata, polysperma. *Semina* pro genere majuscula, 5–6 mm. longa, oblonga, rugulosa, glabra, castanea.—*I. amphorata*, Aitch. in Journ. Linn. Soc. Bot. xix (1880) 155, non Edgew.

AFGHANISTAN: Kurrum Valley; Mt. Safed Koh, in wet places at Shendtoi, alt. 2700–3000 m., *Dr. J. E. T. Aitchison*, 1005.

A well-marked species, distinguished by the lanceolate leaves, very slender bracts, small lip, short spur, small androecium, deflexed capsule and large seeds. Its discoverer describes the stem as very transparent, like glass.—J. D. HOOKER.

Fig. 1, sepal; 2, standard; 3 and 4, wings; 5, lip; 6, stamens; 7, ovary; 8, capsule; 9, seed. *All enlarged.*

IMPATIENS STOLICZKAI, *Hook. f.*

Balsaminaceae.

I. Stoliczkai, *Hook. f.* (*sp. nov.*); *I. brachycentrae*, Kar. et Kir., affinis, differt foliis argute serrulatis, sepalis majoribus lineari-oblongis, alarum lobo distali bilobulato, ovario biovulato, capsulaque disperma.

Herba gracilis, glaberrima, minutiflora, caule simplice vel parum ramoso, inferne nudo. *Folia* 6–10 cm. longa, alterna, petiolata, tenuiter membranacea, ovata vel ovato-lanceolata, acuminata, serrulata vel crenato-serrulata setis interjectis 0, basi acuminata in petiolum gracilem 2–3 cm. longum angustata, costa nervisque utrinque 6–8 gracillimis; glandulae infra-petiolares 0. *Pedunculi* foliis breviores, gracillimi, 2–4-flori; pedicelli capillares, 1–2 cm. longi; bracteae minimae, subulatae. *Flores* vix 1 cm. expansi. *Sepala* 2, lineari-oblonga, 3–5 mm. longa, subacuta. *Vexillum* orbiculare, 4 mm. diametro, costa gracile mutica. *Alae* sessiles, 8 mm. longae; lobus basalis oblongo-rotundatus; distalis duplo major, semilunaris, superne angustatus, apice rotundatus; auricula dorsalis 0. *Labellum* anguste cymbiforme, acutum, 5 mm. longum, basi subtus subsaccatum, vix calcaratum. *Filamenta* gracilia; antherae didymae, obtusae. *Ovarium* fusiforme, rectum. *Capsulae* erectae, ad 12 mm. longae, fusiformes, rectae, acuminatae, 2-spermae. *Semina* ellipsoidea, 4 mm. longa, rugulosa.

Western Himalaya: Kunawur; west of Chini, *Ferd. Stoliczka* in Herb. Mus. Palat. Vindobon.

I have seen only two specimens of this species in the Vienna Herbarium. The character of dispermous capsules may require confirmation, though supported by the ovaries being always 2-ovuled in the same specimen. The habitat given by the collector is:—West from Chini, Aug. 1866.—J. D. Hooker.

Fig. 1, flower; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamens; 7, ovary; 8, capsule; 9, seed. ***All enlarged.***

M.S.del. et lith

J.D.Hooker anal

Tabula 2905.

IMPATIENS VEXILLARIA, *Hook. f.*

Balsaminaceae.

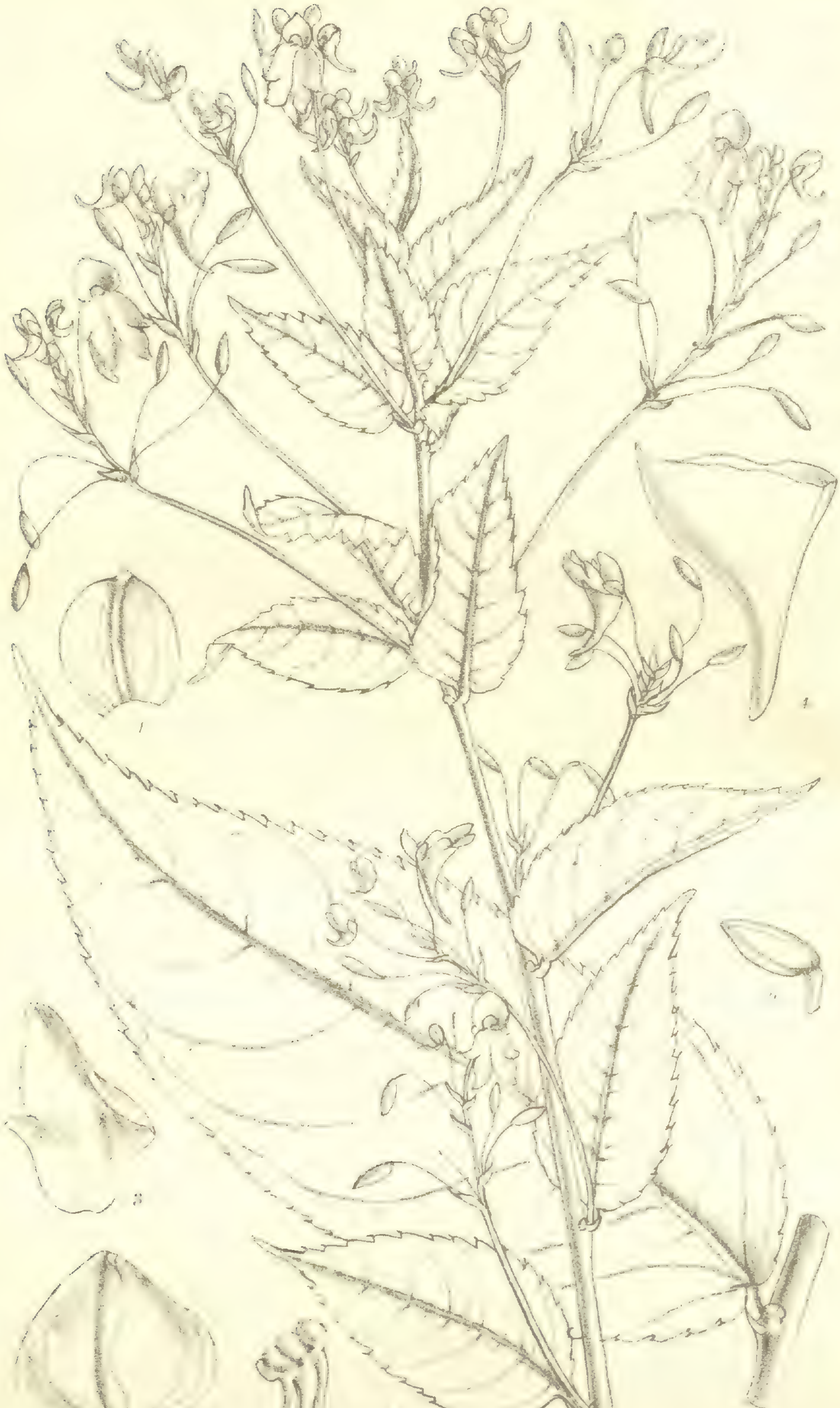
I. vexillaria, *Hook. f.* (*sp. nov.*); herba pusilla, uniflora, alternifolia, inflorescentia pedunculata, pedunculo supra medium bracteato, vexillo pro planta magno orbiculari, calcare limbo labelli breviore.

Herba pusilla, grandiflora, caule simplice 12 cm. alto erecto gracillimo superne paucifoliato apicem versus puberulo. *Folia* 2 cm. longa, alterna, petiolata, firma, ovato-lanceolata, acuminata, serrata, supra setulosa, basi in petiolum brevem angustata, nervis utrinque 5. *Pedunculus* 1 cm. longus, erectus, pubescens, uniflorus, supra medium bractea filiforme pubescente instructus. *Flos* pro planta magnus, ad 2 cm. expansus, albus. *Sepala* 2, late ovato-rotundata, acuminata, hyalina, basi cordata. *Vexillum* maximum, 24 mm. latum, oblate orbiculare, recurvum, apice bilobum, costa gracile mutica. *Alae* angustae, 16 mm. longae, basi anguste cuneatae; lobus basalis brevis; distalis duplo longior, anguste dolabriformis, obtusus; auricula dorsalis 0. *Labelli* limbus elongato-cymbiformis, 15 mm. longus, ascendens, basi subsaccatus in calcar gracile limbo dimidio brevius incurvus, subito attenuatus. *Filamenta* gracilia; antherae stipitatae, didymae, obtusae. *Ovarium* lente curvum, gracile, longe acuminatum.

Western Himalaya: Kunawur; on Narkanda, *Stoliczka* in Herb. Mus. Palat. Vindobon.

I have seen but one specimen of this beautiful little species which is so remarkable for its slender habit, large flower, and especially the disproportionate size of the great white standard, that I do not hesitate to describe and figure it. It may prove to be a small single-flowered specimen of a much larger plant, but I can indicate no obvious affinity. The habitat, Narkanda, is a well-known mountain north of Simla.—J. D. Hooker.

Fig. 1, leaf; 2, flower; 3, sepal; 4, wing; 5, lip; 6, stamens; 7, peduncle, bract and ovary. ***All enlarged.***



M.S.del et lith.

J.D.Hooker anal

Tabula 2906.

IMPATIENS POLYSCIADIA, *Hook. f.*

BALSAMINACEAE.

I. polysciadia, *Hook. f.* (*sp. nov.*) ; inflorescentia pedunculata, multiflora, floribus parvis in racemulos umbelliformes dispositis, bracteis verticillatis.

Herba elata, erecta, glaberrima, floribunda, parviflora, caule sat robusto simplice folioso. *Folia* 5–15 cm. longa, alterna, sessilia vel subsessilia, membranacea, ovata vel oblonga, acuminata, serrata vel serrulata, basi rotundata vel cordata, costa subtus gracile, nervis utrinque 8–10 ; glandulae infra-petiolares 0. *Pedunculi* apicem versus caulis plurimi, 4–6 cm. longi, subcorymbosim dispositi, foliis supremis multo longiores, graciles, apicem versus 3–8-flori ; pedicelli saepissime umbellatim raro racemosim conferti, capillares, 3–5 mm. longi, interdum umbellulas secundarias gerentes ; bracteae verticillatae, ovatae vel ovato-lanceolatae, acuminatae. *Flores* ad 1 cm. expansi, rosei (?). *Sepala* 2, ovato- vel oblongo-rotundata, obtusa, concava, inaequilatera, 4 mm. longa, opaca, costa crassa apice tumida. *Vexillum* ovato-rotundatum, 6 mm. latum, fornicatum, costa dorso alte carinata, infra apicem minute rostellata. *Alae* sessiles, 8–9 mm. longae ; lobus basalis rotundatus, margine superiore antice extruso acuto ; distalis paullo longior, multo angustior, dolabriformis, apice rotundatus ; auricula dorsalis angusta. *Labelli* limbus infundibulari-cymbiformis, in calcar rectum attenuatus, totus 10–12 mm. longus, ore 6 mm. longo subhorizontale. *Filamenta* linearia ; antherae connatae, suberectae, obtusae. *Ovarium* declinatum, rectum, acutum, 5-gonum, multi-ovulatum.

WESTERN HIMALAYA : Kumaon ; specimen raised from seed received from the Royal Botanic Garden, Calcutta, and raised in that of Dahlem, and preserved in the Botanical Museum there (see also tab. 2907).

I know of no near ally of this fine species which is amongst the minute-flowered species of the genus, remarkable for its tall, robust habit, for the profusion of very small flowers umbellately arranged on the tips of the many subcorymbosely disposed peduncles, and for the whorled bracts. The pedicels are rarely racemosely arranged on the peduncles, and not infrequently one of the pedicels of the umbel bears a bracteate

umbellule. I have seen no mature capsules, but I cannot doubt that they are pentagonous, as are the ovary and immature fruit.

Professor Urban informs me that the seeds of this plant were sent to the Royal Botanic Gardens of Dahlem from that of Calcutta, together with those of *I. Langeana*, in 1901, and that they had been collected in Kumaon. They were sown in the Royal Botanic Gardens at Dahlem, and flowered in the same year.—J. D. Hooker.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamens; 6, ovary. *All enlarged.*

1
7
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11
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Tabula 2907.

IMPATIENS LANGEANA, *Hook. f.*

Balsaminaceae.

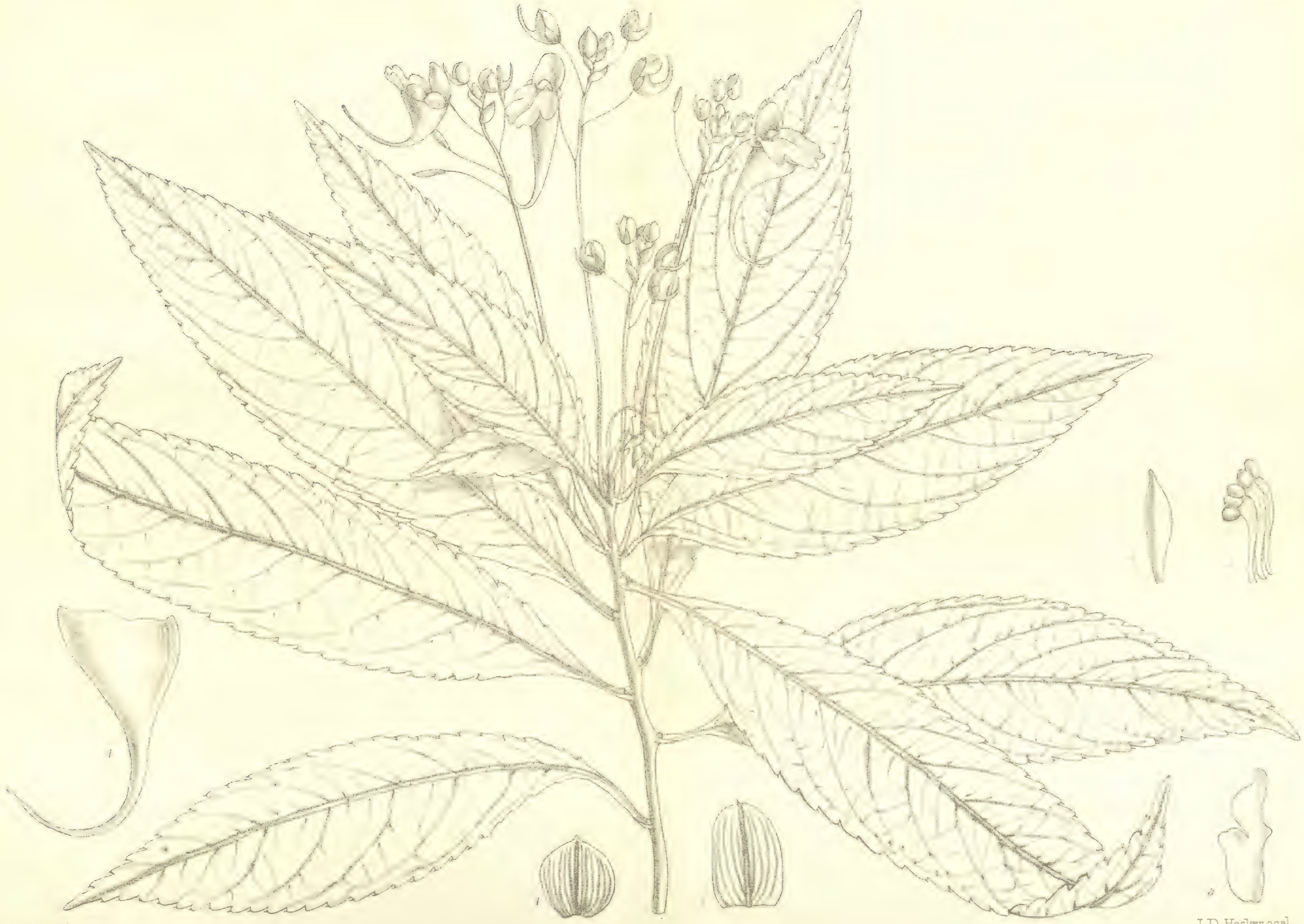
I. Langeana, *Hook. f.* (*sp. nov.*); herba elata, robusta, polyantha, parviflora, inflorescentia pedunculata, puberula, pedunculis pluri-floris, vexillo orbiculare utrinque bilobo, labelli infundibularis calcare limbo paullo longiore.

Herba elata, robusta, parviflora, ramulis foliis novellis et inflorescentia exceptis glaberrima, caule ramoso crassitie inferne pennae olorinae duro. *Folia* 5–15 cm. longa, alterna, superiora sessilia, inferiora breviter petiolata, firma, elliptica vel ovato-oblonga, acuta, serrulata vel crenulata setulis interjectis, inferiora basi in petiolum 2–3 cm. longum angustata, costa subtus prominula, nervis utrinque 10–12; glandulae infra-petiolares magnae, pulvinatae. *Inflorescentia* pubescens. *Pedunculi* foliis supremis axillares corymbosim dispositi, 2–3 cm. longi, graciles, erecti, 6–8-flori; pedicelli capillares, 8–12 mm. longi, medio solum bracteati; bracteae anguste lineari-lanceolatae, 3–5 mm. longae, caducae. *Flores* ad 1.5 cm. expansi. *Sepala* 2, ovato-oblonga vel orbicularia, cuspidata, inaequilatera, glabra vel puberula, membranacea, 5–6-nervia. *Vexillum* orbiculare, fornicatum, 8–10 mm. diametro, basi et apice bilobum, costa dorso crasse carinata vel breviter alata apice mucronata. *Alae* sessiles, 12 mm. longae; lobus basalis amplus, rotundatus, 6 mm. latus; distalis vix longior, multo angustior, dolabriformis, apice rotundatus; auricula dorsalis elongata, inflexa. *Labelli* limbus cymbiformis, acutus, 7 mm. longus, in calcar paullo longius incurvum attenuatus, ore horizontali. *Filamenta* linearia; antherae fere liberae, didymae, erectae, stipitatae. *Ovarium* rectum, acutum. *Capsulae* lineares, acutae, 2–2.5 cm. longae, teretes, erectae, polyspermae. *Semina* oblongo-obovoidea, 2.5 mm. longa, minute granulata.

Western Himalaya: Kumaon; specimens raised from seed received from the Royal Botanic Garden, Calcutta, in 1901, and sown in that of Dahlem and flowered, and preserved in the Botanical Museum there (see also tab. 2906).

The very stout habit, large leaves, shortly peduncled racemes of very small flowers, slender bracts, and slender, erect capsules are characteristic of this plant, which I have difficulty in referring to any of the section of Western Himalayan species.—J. D. Hooker.

Fig. 1, part of leaf ; 2, inflorescence ; 3, sepal ; 4 and 5, standard ; 6, wing ; 7, lip ; 8, stamen ; 9, ovary ; 10, capsule ; 11, seed. *All except fig.* 2 *enlarged.*



M.S. del. et lith.

J.D. Hooker anal.

TABULA 2908.

IMPATIENS CORIOSEPALA, *Hook. f.*

BALSAMINACEAE.

I. coriosepala, *Hook. f.* (*sp. nov.*) ; herba elata, robusta, *I. insigni*, DC., affinis, differt foliis longioribus crenatis, sepalis minoribus orbicularibus, calcare labelli longiore et absentia glandularum ad basin petiolorum.

Herba metralis (?), glaberrima, longifolia, caule simplice robusto. *Folia* 10-17 cm. longa, alterna, subsessilia, papyracea, oblongo-lanceolata, acuminata, crenata setis interjectis 0, exsiccata supra lucida, subtus pallida, basi longe angustata, sessilia vel breviter petiolata, nervis utrinque 10–14 ; glandulae infra-petiolares 0. *Pedunculi* ex axillis superioribus orti, foliis breviores, erecti, stricti, 5–6-flori ; pedicelli 3–5 cm. longi, filiformes ; bracteae ovatae, concavae, acutae, 3–6 mm. longae. *Flores* ad 3 cm. expansi. *Sepala* 2, orbicularia, apiculata, 6-7 mm. lata, crasse coriacea, multinervia, exsiccata dura, costa dorso incrassata. *Vexillum* quadrato-oblongum, 10 mm. longum, apice rotundatum, muticum. *Alae* breves, sessiles, ad 2 cm. longae ; lobus basalis elongatus, oblongus, truncatus, apice acuto ; distalis brevior, infra medium dolabriformis, dein angustatus, obtusus ; auricula dorsalis parva, protrusa. *Labelli* limbus late infundibularis, ad 12 mm. longus, basi in calcar gracile 2–2.5 cm. longum attenuatus ; ore horizontale ad 1.5 cm. diametro obtuso. *Filamenta* gracilia, ad 5 mm. longa ; antherae didymae, connatae.

NEPAL : *Wallich* in Herb. Mus. Palat. Vindobon. 40975, e coll. Reichenbach f.

This handsome species is closely allied to *I. insignis*, DC., also a Nepal plant, of which it may prove to be a form, but which differs in the succulent stem with swollen internodes, the shorter sharply serrate leaves, large pulvinate infra-petiolar glands, ovate sepals, small vexillum and short spur. It agrees with *I. insignis* in the thickly coriaceous sepals and form of the wings and limb of the lip.

The leaves of *I. coriosepala* in the dried specimen before me are very dark olive-brown, shining on the upper surface.—J. D. HOOKER.

Fig. 1, sepal ; 2, standard ; 3, wing ; 4, lip ; 5, stamens ; 6, ovary. ***All enlarged.***

a
b

1
4
3
5
2
6

TABULA 2909.

IMPATIENS PERROTTETII, *Turcz.*

BALSAMINACEAE.

I. **Perrottetii**, *Turcz. in Bull. Soc. Imp. Nat. Mosc.* xxxii. 1 (1859) 272 ; herba pusilla *I. inconspicuae*, Benth., affinis, distincta caule simplice erecto et floribus capsulisque minimis.

Herba annua, pusilla, glaberrima, minutiflora, caule 10–15 cm. alto simplice erecto tenue inferne longe nudo. *Folia* opposita, sessilia, 2 cm. longa, anguste linearia, acuminata, spinuloso-serrulata, crassiuscula, subtus pallida, infima rotundata vel elliptica, costa subtus crassa, nervis utrinque paucis obscuris ; glandulae infra-petiolares pulvinatae vel 0. *Pedicelli* in axillis solitarii, florentes 5 mm. longi, fructiferi duplo longiores, deflexi. *Flores* 3–4 mm. expansi. *Sepala* 2, 2.5 mm. longa, anguste linearia, acuminata, falcata, uninervia. *Vexillum* orbiculare, 2.5 mm. diametro, costa simplice apice mucronata. *Alae* 3 mm. longae, basi cuneatae ; lobus basalis oblongus, erectus, apice rotundatus ; distalis duplo major, inflexus, obovatus, basalem obtegens ; auricula dorsalis magna, prominens. *Labellum* cymbiforme, 2.5 mm. longum, acuminatum, subtus rotundatum, ecalcaratum. *Filamenta* gracilia, brevia ; antherae didymae. *Ovarium* ellipsoideum, acutum. *Capsulae* 4–5 mm. longae, turgidae, ellipsoideae, breviter stipitatae, acute rostratae, oligospermae. *Semina* orbicularia, 1.5 mm. diam., laevia, atra, nitida.—*I. inconspicua*, Benth. partim, Hook. f. in Rec. Bot. Surv. Ind. iv. (1906) 58.

NILGIRI HILLS : *Perrottet*, 176 in Herb. Mus. Palat. Vindobon.

When drawing up the epitome of the Peninsular Indian species of *Impatiens* for the Records of the Botanical Survey of India I had not seen *I. Perrottetii*, of which I have lately found excellent specimens in the Vienna Herbarium, liberally placed at my disposal for study. These so closely resemble *I. pusilla*, Heyne, and what starved or drawn-up specimens of *I. inconspicua*, Benth., might be supposed to be like, that I cannot but doubt the validity of the species.—J. D. HOOKER.

Fig. 1, leaves ; 2, sepal ; 3, standard ; 4, wing ; 5, lip ; 6, stamen ; 7, ovary ; 8, capsule ; 9, seed. *All enlarged.*

2910

TABULA 2910.

IMPATIENS MICROTHECA, *Hook. f.*

BALSAMINACEAE.

I. microtheca, *Hook. f.* (*sp. nov.*); *I. Goughii*, Wight, affinis, differt floribus capsulisque minimis et lobo distale alarum profunde bifido.

Herba annua, humilis, minimiflora, caule gracile erecto 5-8 cm. alto simplice vel ramoso paucifoliato. *Folia* 1–2 cm. longa, opposita, longe petiolata, membranacea, ovata, subacuta, crenato-serrulata, basi cuneata vel rotundata, petiolo gracillimo laminae aequilongo vel breviore, nervis utrinque 3–4; glandulae infra-petiolares 0. *Pedunculi* foliis longiores, capillares, sub-umbellatim 3–6-flori; pedicelli 1–1.5 cm. longi; bracteae minutae, lanceolatae, persistentes. *Flores* minuti, albo-violacei(?). *Sepala* 2, oblique ovata, obtusa vel acuta, 1 mm. longa, uninervia, basi oblique cordata. *Vexillum* suborbiculare, inferne paullo angustatum, apice fere truncatum, muticum, disco violaceo(?), costa gracile. *Alae* 4 mm. longae, basi latae; lobus basalis late oblongus, apice rotundatus, disco coloratus; distalis duplo longior, alte bifidus lobulis divaricatis obtusis; auricula dorsalis in pilum in calcare labelli(?) descendentem producta. *Labelli* limbus cymbiformis, acutus, 3 mm. longus; calcar limbo aequilongum, rectum, paullo inflatum, obtusum. *Capsulae* 3–4 mm. longae, turgidae, ellipsoideae, breviter stipitatae, acute rostratae, oligospermae. *Semina* obovoidea vel globosa, compressa, 1 mm. diametro, laevia, castanea.—*I. circaeoides*, Turcz. in Bull. Soc. Imp. Nat. Mosc. xxxvi. 1 (1863) 594, non Wallich.

NILGIRI HILLS: *Perrottet*, 171 in Herb. Mus. Palat. Vindobon.

I. microtheca is an ally of *I. Goughii*, Wight, from which it differs in its minute flowers and in the deeply bifid distal lobe of the wings. Owing to the minuteness, contraction and distortion of the floral organs I found it difficult to lay them out for the description, which may want revision.—J. D. HOOKER.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, capsule; 6, seed. *All enlarged.*

Tabula 2911.

IMPATIENS DEBILIS, *Turcz.*

BALSAMINACEAE.

I. debilis, *Turcz. in Bull. Soc. Imp. Nat. Mosc.* xxxii. 1 (1859) 272; *I. tenellae,* Heyne, affinis, differt caule ramosissimo ramisque strictis erectis floribus minutis et labelli calcare breve.

Herba annua, 20–30 cm. alta, erecta, glaberrima, polyantha, minutiflora, caule e basi ramoso, ramis ramulisque erectis gracilibus foliosis. *Folia* 2–3 cm. longa, opposita, sessilia, rigida, elliptico-lanceolata, acuminata, remote serrulata vel spinulis raris ciliata, basi acuta vel obtusa, costa subtus valida, nervis utrinque 3–4 obscuris; glandulae infra-petiolares 0. *Pedicelli* in axillis superioribus solitarii vel bini, floriferi 4–5 mm. longi, fructiferi 5–10 mm. longi. *Flores* 5–6 mm. expansi, albi (?). *Sepala* 2, anguste linearia, acuminata, 3–4 mm. longa, uninervia. *Vexillum* orbiculare, cucullatum, obtuse cuspidatum, 3 mm. latum, costa tenui simplice. *Alae* subsessiles, 5–7 mm. longae, incurvae; lobus basalis minimus, oblongus; distalis amplus, oblique obovatus, 7 mm. longus, nervis lineatus; auricula dorsalis minuta, basi alae proxima. *Labellum* cymbiforme, ovatum, acuminatum, 3–5 mm. longum; calcar limbo aequilongum vel brevius, rectum vel incurvum, ore horizontale longe acuminato. *Filamenta* brevia, filiformia; antherae didymae. *Ovarium* falcatum, cylindricum, obtusum. *Capsulae* 8–10 mm. longae, vix stipitatae, medio ventricosae, longe acutae, rostratae, puberulae, 1–2-spermae. *Semina* orbicularia, compressa, 3 mm. diametro, laevia, atra, nitida.—Hook. f. Fl. Brit. Ind. i. 483; et in Rec. Bot. Surv. Ind. iv. (1906), 58.

NILGIRI HILLS: *Perrottet,* 180 in Herb. Mus. Palat. Vindobon.

A very distinct species, remarkable for its strict erect much-branched habit, with erect branches, with many flowering leaf-axils towards the tips, rigid narrowly lanceolate sessile leaves, minute flowers and small 1–2-seeded capsules.—J. D. HOOKER.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary; 7, capsule; 8, seed. *All enlarged.*

M.S. del. et lith.

J.D Hooker anal.

Tabula 2912.

IMPATIENS LACEI, *Hook. f.*

Balsaminaceae.

I. Lacei, *Hook. f.* (*sp. nov.*) ; herba elata, ramosa, alternifolia, grandiflora, foliis ovato-lanceolatis petiolisque pilis capillaribus elongatis marginatis.

Herba erecta, 1–1.5 m. alta, foliis exceptis glaberrima, grandiflora, caule stricto, ramis patulis. *Folia* 5–10 cm. longa, alterna, petiolata, ovata vel ovato-oblonga, acuminata, crenata, ciliolata, infra medium pilis patentibus 3–8 mm. longis crinita, tenuiter membranacea, supra sparsim pilosa, subtus glabra vel costa nervisque puberulis, basi rotundata vel cuneata, nervis utrinque 8–12, petiolo 2–4 cm. longo gracile pubescente et piloso, pilis passim glanduliferis; glandulae stipulares 0. *Pedunculi* petiolo breviores, 1–2 cm. longi, rigidi, glaberrimi, apice 1–2-flori ; pedicelli pedunculo aequilongi, glaberrimi, fructiferi elongati ; bracteae minutae, herbaceae, ovatae. *Flores* ampli, albi, roseo-punctati, 5 cm. longi. *Sepala* 2, parva, 5 mm. longa, ellipticо-ovata, acuta, 5–7-nervia, viridia, basi rotundata. *Vexillum* orbiculare, 12–15 mm. diametro, basi rotundatum, apice retusum, costa dorso carinata apiculata. *Alae* sessiles, 2–2.5 cm. longae, basi cuneatae ; lobus basalis amplus, rotundatus ; distalis aequilongus, late dolabriformis, paullo recurvus ; auricula dorsalis protrusa. *Labellum* maximum, calcare incluso 4 cm. longum, saccatum, basi rotundatum, abrupte in calcar robustum 6–10 mm. longum attenuatum ; ore lente ascendente obtuso apiculato. *Filamenta* 4 mm. longa, gracilia ; antherae mediocres, superpositae. *Ovarium* lineare, rectum, rostratum. *Capsulae* ellipsoideae, erectae, breviter stipitatae et acute rostratae, polyspermae. *Semina* immatura 2.5 mm. longa, compressa, minute papillosa, pallida.

Lower Burma : Pegu ; banks of the Pyinma Chaong, lat. 17.20° N., long. 96.10° E., January 1906, *J. H. Lace,* 288.

A very beautiful plant, remarkable for the very long spreading simple hairs sometimes more than a quarter of an inch long in the lower crenatures of the minutely ciliolate leaves, and the large flowers which

Mr. Lace describes as white dotted in parts with pinkish purple. I find no raphides in leaf or flower. The cilia of the leaf margins are hyaline and multiseptate, the long hairs of the crenatures are rigid and opaque. Mr. Lace informs me that the forest in which this species is found is of the mixed kind, consisting principally of *Lagerstroemia Flos Reginae*, *Xylia dolabriformis* and *Albizzia procera*, with Bamboos. The discovery of so handsome a species in the tropical forests of Pegu was quite unexpected. In the dried specimens the flowers are uniformly pale yellow and impunctate. Unlike the species of cooler climates it flowers in January.—J. D. Hooker.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamens; 6, ovary; 7, capsule; 8, seed. *All enlarged.*

J.D.Hooker anal.

TABULA 2913.

IMPATIENS LENTA, *Hook. f.*

BALSAMINACEAE.

I. lenta, *Hook. f.* (*sp. nov.*) ; *I. tenellae*, Heyne, affinis, differt foliis oblongis integerrimis, pedicellis foliis longioribus, alis longe stipitatis, capsulisque polyspermis.

Herba flaccida, 20 cm. alta, glaberrima, parviflora, caule simplice erecto gracile inferne longe nudo, internodiis elongatis. *Folia* 2–3 cm. longa, opposita, integerrima vel remote denticulata, inferiora brevia, ovata, breviter petiolata, superiora sessilia vel subsessilia, oblonga vel obovato-oblonga, acuta, subtus pallida, basi truncata vel cordata, costa subtus valida nervis obscuris ; glandulae infra-petiolares minutae, setaceae, deflexae. *Pedicelli* solitarii, foliis longiores, fructiferi fere duplo longiores, glaberrimi. *Flores* ad 2 cm. expansi, lilacini (?). *Sepala* 2, anguste linearia, apice capillaria, 3-nervia. *Vexillum* parvum, orbiculare, 4–5 mm. latum, costa dorso carinata, infra medium dilatata, apice cuspidata. *Alae* longe stipitatae, 12 mm. longae ; lobus basalis parvus, stipiti insertus, anguste lanceolatus, erectus, ad 3 mm. longus ; distalis amplus, obovatus vel late dolabriformis, erectus, basi angustatus, apice rotundatus ; auricula dorsalis parva, lobo basali opposita. *Labellum* cymbiforme, acuminatum, 8–10 mm. longum, calcare gracile ad 16 mm. longo. *Filamenta* subulata ; antherae minutae, superpositae. *Ovarium* angustum, acuminatum, rectum. *Capsulae* 10–12 mm. longae, anguste ellipsoideae, compressae, breviter stipitatae, longe acute rostratae, polyspermae. *Semina* minuta, ad 2 mm. diametro, subglobosa, atra, nitida.

NILGIRI HILLS : *Perrottet*, 175 in Herb. Mus. Palat. Vindobon.

Closely allied to *I. tenella*, Heyne, but the leaves are entire, the pedicels much longer and perfectly glabrous, and the flowers larger with a longer stipes.—J. D. HOOKER.

Fig. 1, flower ; 2, sepal ; 3, standard ; 4, wing ; 5, lip ; 6, stamen ; 7 ovary ; 8, capsule ; 9, seeds. *All enlarged.*

M.S. del et lith.

J.D.Hooker anal.

Tabula 2914.

IMPATIENS TRICHOCARPA, *Hook. f.*

Balsaminaceae.

I. trichocarpa, *Hook. f.* (*sp. nov.*); herba parviflora, foliis alternis, floribus capsulisque exceptis glaberrima, inflorescentia simpliciter pedicellata, sepalis minimis, vexillo mucronato, labelli calcare limbo breviore.

Herba annua, 20-30 cm. alta, capsulis exceptis glaberrima, erecta, ramosa, parviflora, caule inferne nudo robusto, ramis erectis foliosis. *Folia* 4-6 cm. longa, alterna, subsessilia, coriacea, elliptico-lanceolata, acuta, serrulata, deorsum interdum in petiolum brevem longe angustata, costa subtus crassa, nervis utrinque 5-6 gracilibus; glandulae infrapetiolares 0. *Pedicelli* solitarii, raro bini, 1–1.5 cm. longi, glabri vel puberuli, fructiferi paullo longiores. *Flores* ad 1.5 cm. expansi. *Sepala* 2, minima, ovata, acuta. *Vexillum* orbiculare, cucullatum, demum recurvum, 7 mm. diametro, costa dorso carinata apice mucronata. *Alae* ad 12 mm. longae, stipitatae; lobus basalis rotundatus vel late oblongus; distalis erectus, vix duplo major, semilunaris vel late dolabriformis; auricula dorsalis prominens, decurva. *Labellum* cymbiforme, acutum, 8 mm. longum, pubescens; calcar limbo brevius, incurvum, robustum, obtusum. *Filamenta* brevia, subulata. *Ovarium* ellipsoideum, acutum. *Capsulae* 10–12 mm. longae, turgidae, ellipsoideae, breviter stipitatae, acute rostratae, dense appresse tomentosae, polyspermae. *Semina* globosa, 2 mm. diametro, minutissime hirtella.

Nilgiri Hills: *Perrottet*, 176 in Herb. Mus. Palat. Vindobon.

Closely allied to *I. scaberula* of the Western Ghats and Mysore, but differing in the glabrous branches, sessile or subsessile leaves, and the short incurved spur.—J. D. Hooker.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamens; 6, ovary; 7, capsule; 8, seed. *All enlarged.*

M.S. del. et lith.

J.D.Hooker anal.

Tabula 2915.

IMPATIENS COSMIA, *Hook. f.*

Balsaminaceae.

I. cosmia, *Hook. f.* (*sp. nov.*); *I. chinensi*, L., affinis, differt caule brevi flexuoso, foliis obovato-oblongis et floribus parvis.

Herba debilis, glaberrima, 15–20 cm. alta, caule simplice gracile flexuoso inferne longe nudo. *Folia* 2–3 cm. longa, opposita, brevissime petiolata, firma, anguste obovato-oblonga, subacuta vel apiculata, integerrima vel marginibus remote setosis, basi acuta subtus pallida, costa robusta, nervis utrinque 4–5 obscuris ; glandulae infra-petiolares 0 vel minimae. *Pedicelli* in axillis supremis solitarii, erecti, ebracteati. *Flores* ad 1.5 cm. expansi, rosei (?). *Sepala* 2, anguste linearia, 5–7 mm. longa, acuminata, 3-nervia. *Vexillum* orbiculare, 5 mm. diametro, costa gracile apiculata. *Alae* brevissime stipitatae, 1–1.5 cm. longae ; lobus basalis parvulus, oblongus, erectus, apice rotundatus ; distalis amplus, rotundatus, semilunaris vel late dolabriformis, 10–14 mm. latus ; auricula dorsalis rotundata, protrusa. *Labelli* limbus cymbiformis, acuminatus, ascendens ; calcar robustum, limbo duplo longius, incurvum vel involutum. *Filamenta* brevissima, subulata ; antherae obtusae. *Ovarium* fusiforme, paullo falcatum.

China: Jungkun, *Faber*, in Herb. Mus. Palat. Vindobon.; Chekiang, *Capt. Jacobs* in Herb. Kew.

A very near ally of the widely distributed *I. chinensis*, L., and probably only a form of that variable plant, but differing widely in aspect, the whole plant being only a span high with a slender flexuous stem, and short obovate, almost entire leaves. There are four specimens collected by Father Faber in the Vienna Herbarium ; Capt. Jacobs' is a solitary one.—J. D. Hooker.

Fig. 1, sepal ; 2, standard ; 3, wing ; 4, lip ; 5, stamens ; 6, ovary. *All enlarged.*

Tabula 2916.

IMPATIENS CRASSICORNU, *Hook. f.*

Balsaminaceae.

I. crassicornu, *Hook. f.* (*sp. nov.*); *I. chinensi*, L., affinis, differt sepalis ovato-lanceolatis, vexillo dorso crasse cristato et calcare labelli crasso medio inflato.

Herba robusta, glaberrima, caule simplice erecto stricto crasso. *Folia* 4–5 cm. longa, opposita, subsessilia, subcoriacea, lineari-oblonga, acuta vel obtusa et mucronata, basi angustata, marginibus remote spinuloso-serrulatis, infima breviora, obovato-oblonga, subtus pallida, costa firma, nervis paucis obscuris; glandulae infra-petiolares setaceae, deflexae. *Pedicelli* solitarii, 2–3 cm. longi, ebracteati. *Flores* ad 2 cm. expansi, crassiusculi. *Sepala* ovato-lanceolata, acuminata, 5–7 mm. longa, firma, 5-nervia. *Vexillum* ovato-rotundatum, acuminatum, ad 8 mm. longum, convexum, costa dorso crasse cristata. *Alae* sessiles, 12–15 mm. longae; lobus basalis parvus, oblongus, obtusus, decurvus; distalis erectus, late stipitatus, semilunaris vel late dolabriformis, apice rotundatus; auricula dorsalis rotundatus. *Labelli* limbus cymbiformis, acutus, ascendens, 3 mm. longus; calcar quam limbus ter longior, incurvum, crassum quasi inflatum, apice bidentatum. *Filamenta* brevissima, subulata; antherae obtusae. *Ovarium* fusiforme, obtusum, incurvum.

China: Prov. Kwantung; Mt. Pakwan, near Canton, Herb. Mus. Palat. Vindobon.

A well-marked species of which I have seen but one specimen faintly ticketed in pencil as from near Canton. Its affinity is with *I. chinensis*, from which it widely differs in the rigid ovate-lanceolate sepals, in the thick texture of the floral envelopes, crested vexillum, and in the remarkable lip, the inflated spur of which is thick-walled, contracted at the base and strongly incurved. The collector's name is not inscribed on the sheet with the specimen.—J. D. Hooker.

Fig. 1, flower; 2, sepal; 3 and 4, standard; 5 and 6, wings: 7, lip; 8, stamens; 9, ovary. *All enlarged.*

M.S del et lith.

J.D.Hooker anal.

TABULA 2917.

IMPATIENS IMBECILLA, *Hook. f.*

BALSAMINACEAE.

I. imbecilla, *Hook. f.* (*sp. nov.*) ; herba flaccida, glaberrima, *I. Faberi* proxima, foliis ovatis, inflorescentia pedunculata pauciflora, alarum auricula dorsali in filum elongatum producta.

Herba gracilis, ramosa, glaberrima, flaccida, parviflora, caule 20–30 cm. longo laxe folioso. *Folia* 3–8 cm. longa, alterna, petiolata, membranacea, ovata, acuminata, grosse crenato-serrata, basi cuneata, petiolo gracile 2–4 cm. longo, nervis utrinque 4–7 ; glandulae infrapetiolares 0. *Pedunculi* foliis subaequilongi, patentes, graciles, 1–5-flori ; pedicelli 1–2 cm. longi ; bracteae minutae, ovato-lanceolatae, deciduae. *Flores* ad 2 cm. longi. *Sepala* 2, ovato-rotundata, longe acuminata, 4 mm. longa. *Vexillum* orbiculare, 7 mm. latum, apice bilobum, costa dorso carinata, carina crenulata apice rostrata. *Alae* sessiles, 8–10 mm. longae ; lobus basalis rotundatus vel subtrigonus ; distalis paullo longior, dolabriformis, apice rotundatus ; auricula dorsalis in pilum elongatum in labelli calcar descendentem producta. *Labellum* corniforme, 12–14 mm. longum, ab ore ascendente acuminato deorsum sensim attenuatum, rectum vel falcatum. *Filamenta* linearia ; antherae didymae, subacutae. *Ovarium* lineare, 5-costatum, rectum, acutum.

CHINA : Szechuen ; Mt. Omei, alt. 2700 m., *Faber*, 865, ex Aug. Henry ; in Herb. Mus. Palat. Vindobon. 624 ; et in Herb. Bot. Nov. Eborac.

I. imbecilla is closely allied to *I. Faberi*, Hook. f. ms., a much larger plant with long subsessile lanceolate leaves, found also on Mt. Omei by Father Faber and subsequently by Mr. Wilson, but at a very low elevation. Both species have the dorsal auricle of the wings produced into a slender filament descending into the spur of the lip.

Specimens in Herb. Kew from Aug. Henry ticketed ‘ n. 805, Mt. Omei, 9000 ft. to summit, Rev. Ernst Faber,’ differ from the above description in having narrowly ovate subacute sepals, a more oblong standard, bifid at the base, and larger broader anthers.—J. D. HOOKER.

Fig. 1, flower with pedicel and bract ; 2, sepal ; 3 and 4, standard ; 5, spur of lip ; and wing showing the dorsal auricle descending into the spur ; 6, wing : 7, lip ; 8, stamen ; 9, ovary. *All enlarged.*

Tabula 2918.

IMPATIENS PYGMAEA, *Hook. f.*

Balsaminaceae.

I. pygmaea, *Hook. f. in Kew Bull.* 1909, p. 8 ; herba humilis, *I. Boni.* Hook. f., arcte affinis, foliis parvis late ovato-rotundatis cuspidatis utrinque 3–4-nerviis, s palis parvis ovato-rotundatis cuspidatis et alarum lobis distalibus brevioribus et latioribus diversa.

Herba humilis, glaberrima, succosa, caule simplice et columnare 3–4 cm. alto robusto inferne nudo cicatricato. *Folia* 2–4 cm. longa, conferta, alterna, longe petiolata, crassa, late ovata vel ovato-rotundata, acuta, fere integerrima, petiolo 3–5 cm. longo, nervis utrinque 4–5. *Inflorescentia* simpliciter pedicellata ; pedicelli foliis breviores, basi ebracteati. *Flores* ad 2.5 cm. expansi, albi, apicibus violaceis. *Sepala* 4, 2 exteriora late ovata, acuminata, 6–9 mm. longa, tenuiter membranacea ; 2 interiora minuta, ovata, membranacea. *Vexillum* obovato-oblongum, 13 mm. longum, apice bilobum, costa dorso infra medium gibbo obtuso instructa sinu minute rostellato. *Alae* 2 cm. longae ; lobi basales falcatim flabelliformes ; distales in laminam suborbicularem 12–15 mm. latam ad medium bifidam connati ; auriculae dorsales minutae. *Labelli* limbus late cymbiformis, 14 mm. longus, ore horizontale obtuso ; calcar brevissimum, inflatum, incurvum, integrum vel bilobum. *Filamenta* brevia, linearia ; antherae in capitulum inclinatum connatae, obtusae. *Ovarium* ineare.

Indo-China : Tonkin ; Hao-pho, Thong Sau Valley, in shady places by rivulets, *Abbé Bon*, 1399 Herb. Miss. Tonq. occid. in Herb. Mus. Fribourg.

The accompanying ticket is inscribed ‘ folia crassa flores albi apice violacei.’—J. D. Hooker.

Fig. 1, sepal ; 2, standard ; 3, wings ; 4, wings with more divergent distal lobes excised in the margin ; 5, lip ; 6, stamens ; 7, ovary. *All enlarged.*

TABULA 2919.

IMPATIENS MUSYANA, *Hook. f.*

BALSAMINACEAE.

I. Musyana, *Hook. f. in Kew Bull.* 1909, p. 8; *I. Boni*, Hook. f., affinis, differt foliis serrulatis basi biglandulosis utrinque 5–6-nerviis crassiusculis, floribus multo majoribus et alarum lobis basalibus sessilibus distalibus amplis multo minoribus.

Herba humilis, succulenta, glaberrima, caule simplice columnari robusto 5–6 cm. longo inferne longe nudo cicatricato. *Folia* conferta, 5–10 cm. longa, alterna, petiolata, crassiuscula, ovata, acuta vel obtusa, crenato-serrata, basi acuta, petiolo 2–4 cm. longo apice raro biglanduloso, nervis utrinque 8–12. *Inflorescentia* simpliciter pedicellata; pedicelli 3–4 cm. longi, basi ebracteati. *Flores* 3–5 cm. expansi, roseo-violacei, intus flavi. *Sepala* 4, 2 exteriora ovata vel ovato-rotundata, cuspidata, 12–14 mm. longa, firma, opaca, reticulatim multinervia; 2 interiora minima, oblonga, cuspidata, firma. *Vexillum* obovato-oblongum vel obcordatum, apice bilobum 15–18 mm. longum, galeatum, recurvum, costa dorso infra medium alte carinata, sinu rostellata. *Alae* amplae; lobi basales 1.5–2.5 cm. longi, late falcatim flabelliformes; distales in laminam amplam orbicularem 2–2.5 cm. latam integram connatae; auriculae dorsales parvae, arcte connatae. *Labelli* limbus cupularis vel alte cymbiformis, ore oblongo acuto 2–2.5 cm. longo horizontale; calcar breve, robustum vel subinflatum; 8–10 mm. longum, rectum vel incurvum. *Filamenta* elongata, linearia; antherae in capitulum globosum inclinatum connatae. *Ovarium* leviter falcatum, acuminatum.

INDO-CHINA: Tonkin; Dieb Long, on Mt. Soi, *Abbé Bon*, 2897 Herb. Miss. Tonq. occid. in Mus. Fribourg.

On the ticket in Mus. Fribourg is 'Planta carnosa; flor. roseo-violacei flavi ad imam.' I have named it after M. Musy of Fribourg, to whom I am indebted for the loan of the Indo-Chinese balsams in the Museum of that city.—J. D. HOOKER.

Fig. 1, outer sepal; 2. inner sepal; 3. standard; 4, wings; 5, lip; 6, stamens; 7, ovary. *All enlarged.*

Tabula 2920.

IMPATIENS THORELII, *Hook. f.*

I. Thorelii, *Hook. f. in Lecomte, Notul. Systemat.* 1 (1909) 13; herba humilis, ramosa, foliosa, foliis alternis ovatis serrulatis, floribus longo pedicellatis parvis, labelli calcare gracillimo pendulo.

Herba erecta, glaberrima, exsiccata flaccida, parviflora, caule simplice gracile 20–25 cm. alto. *Folia* 4–7 cm. longa, alterna, longe petiolata, membranacea, ovata vel ovato-lanceolata, acuminata, minute serrulata, basin versus ciliata, in petiolum gracile 2–4 cm. longum angustata, nervis utrinque 5–6. *Inflorescentia* simpliciter pedicellata; pedicelli capillares, florentes foliis breviores, fructiferi 5–7 cm. longi. *Flores* ad 1.5 cm. expansi. *Sepala* 2, orbicularia, cuspidata, 4 mm. diametro. *Vexillum* oblate obcordatum, 10 mm. latum, costa apice sinu mucronata. *Alae* sessiles, 12 mm. longae; lobi suberecti, basalis obovatus apice rotundatus; distalis paullo longior et latior, subtruncatus; auricula dorsalis obscura. *Labelli* limbus scaphiformis, ovatus, acutus, 7 mm. longus, ascendens; calcar gracile, 3–3.5 cm. longum. *Filamenta* brevissima; antherae minutae, connatae. *Ovarium* breve, turgidum. *Capsulae* 1 cm. longae, fere rectae, medio gibbose turgidae, utrinque attenuatae, stipitatae, acute rostratae, polyspermae. *Semina* minima, ellipsoideo-oblonga, 1 mm. longa, laevia, castanea, nitida.—J. D. Hooker.

Indo-China: Expéd. du Mekong, 1866–1868, *Thorel*, 2113 in Herb. Mus. Paris.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, ovary; 6, capsule; 7, seed. *All enlarged.*

Tabula 2921.

IMPATIENS MONOTRICHA, *Hook. f.*

Balsaminaceae.

I. monotricha, *Hook. f. in Lecomte, Notul. Systemat.* 1 (1909) 12; herba humilis, ramosa, glaberrima, foliis alternis ovatis serrulatis, floribus longe graciliter pedicellatis, vexillo late obcordato, alarum lobo basale amplo obcordato, distale multo minore apice longe aristato, labelli calcare gracillimo pendulo.

Herba humilis, glaberrima, caule simplice vel furcato, saepissime columnari inferne longe nudo. *Folia* 4–7 cm. longa, alterna, breviter petiolata, crassiuscula, exsiccata firma, ovata, acuta vel acuminata, serrulata, infra medium in petiolum crassum 3–5 mm. longum angustata, marginibus basin versus nudis vel longe setosis, costa subtus crassiuscula, nervis utrinque 5–6. *Inflorescentia* simpliciter pedicellata; pedicelli foliis longiores, graciles, erecti, fructiferi valde elongati. *Flores* ad 2.5 cm. expansi. *Sepala* 2, ovato-rotundata, cuspidata, 10–12 mm. diametro, reticulatim nervosa. *Vexillum* amplum, profunde obcordatum, 18–20 mm. latum, costa dorso carinata apice valide rostrata. *Alae* sessiles, 2 cm. longae; lobus basalis parvus, apice obtusus, pilo terminatus; distalis multo major, late obcordatus, muticus; auricula dorsalis parva. *Labelli* limbus cymbiformis, subaristato-acuminatus, 13 mm. longus, horizontalis; calcar gracile, 2–2.5 cm. longum. *Filamenta* brevissima, lata; antherae orbiculares, connatae. *Ovarium* breve, turgidum. *Capsulae* gibbose ovoideae, utrinque attenuatae, obtusae, subfalcatae, 11 mm. longae, polyspermae. *Semina* vix matura, 1 mm. longa, oblonga, compressa, glabra.

Indo-China: Laos; bassin de Attopeu, Mt. Hupen, alt. 1800–2700 m., *Harmand,* 1137 in Herb. Mus. Paris.

The flowers are in a bad state of preservation and I had great difficulty in laying out their organs. I have seen but one capsule.—J. D. Hooker.

Fig. 1, flower with the perianth segments detached; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary; 8, capsule; 9, seeds. *All except fig.* 1 *enlarged.*

M Sadler lith.

J D Hooker anal.

IMPATIENS INOPS, *Hook. f.*

BALSAMINACEAE.

I. inops, *Hook. f. in Lecomte, Notul. Systemat.* 1 (1909) 12; herba parvula, caule basi longe repente pubescente, foliis alternis ovatis basi utrinque spinosis, pedicello erecto foliis multo longiore, floribus parvis pubescentibus, alarum lobo basale amplo, distale parvo, labelli calcare mediocri pendulo.

Herba humilis, parviflora, caule subsimplice basi repente superne rigido flexuoso tomentoso. *Folia* 1.5–2.5 cm. longa, alterna, petiolata, firma, ovata vel oblonga, acuta, basi cordata, supra scaberula, subtus tomentella, basin versus nuda vel spinulis paucis marginata, petiolo 6–10 mm. longo tomentello, nervis utrinque 3–4. *Inflorescentia* simpliciter pedicellata; pedicelli foliis longiores, graciles, pubescentes. *Flores* 2 cm. expansi, perigonii foliola crassa. *Sepala* 2, ad 1 mm. longa, ovata, acuta, pubescentia. *Vexillum* oblate obcordatum, ad 10 mm. latum, costa dorso incrassata e sinu inter lobos rostrata. *Alae* sessiles, 11 mm. longae; lobus basalis amplus, rotundatus, margine antico intruso; distalis minor, oblongus, erectus, apice rotundatus; auricula dorsalis minuta, incurva. *Labelli* limbus ovatus, acutus, cymbiformis, ascendens; calcar gracile 12 mm. longum.—J. D. HOOKER.

INDO-CHINA: Laos; bassin de Attopeu, alt. 900 m., *Harmand* in Herb. L. Pierre, 3318 in Herb. Mus. Paris.

Fig. 1, leaf; 2, pedicel, sepals, lip and stamens; 3, sepal; 4, standard; 5, wing; 6, lip. *All enlarged.*

J.D.Hooker anal.

Tabula 2923.

IMPATIENS DIFFUSA, *Hook. f.*

Balsaminaceae.

I. diffusa, *Hook. f. in Kew Bull.* 1909, 7; herba diffusa, ramosa, parviflora, foliis alternis ovato-oblongis fere integerrimis, sepalis 4–5 mm. latis orbicularibus cuspidatis, alarum lobis brevibus consimilibus **obcordatis, labelli calcare elongato gracile.**

Herba 20–30 cm. alta, glaberrima, flaccida, parviflora, caule succoso e basi diffuse ramoso, ramis elongatis flexuosis. *Folia* 0.5–12 cm. longa, alterna, petiolata, exsiccata membranacea, elliptica, ovata vel oblonga, acuta vel acuminata, indistincte crenulata setulis interjectis, vel minute serrulata, basi cuneata, marginibus nudis vel pauci-ciliatis, in petiolum 2–3 cm. longum gracilem angustata, nervis utrinque 5–7. *Inflorescentia* simpliciter pedicellata; pedicelli basi ebracteati, florentes folio breviores, fructiferi 4–5 cm. longi. *Flores* ad 1 cm. expansi, raphides 0. *Sepala* 2, late ovato-rotundata, cuspidata, 5 mm. lata, laxe reticulatim nervosa. *Vexillum* oblate obcordatum, 6–8 mm. latum, costa dorso alata apice mucronata. *Alae* sessiles, 8–9 mm. longae; lobi erecti, obcordati, sinubus muticis, distalis basali paullo major; auricula dorsalis parva, prope basin alae. *Labelli* limbus scaphiformis, ovatus, 6–7 mm. longus, ore ascendente apice aristulato; calcar gracile, ad 2 cm. longum. *Filamenta* brevia, subulata; antherae orbiculares, connatae, introrsae, obtusae. *Ovarium* oblongum, obtusum. *Capsulae* 10–15 mm. longae, subfalcatae, medio gibbose turgidae, breviter stipitatae, acute rostratae, polyspermae. *Semina* **oblonga, 2.5–3 mm. longa, laevia, castanea.**

Indo-China: Cambodia; Song Treng, *Harmand*, 89 in Herb. Mus. Paris.

In additional specimens received from the Paris Herbarium subsequent to the printing of the description in the Kew Bulletin, I find no leaves with ciliate margins towards the base. They are ticketed as from Herb. L. Pierre, collected and numbered by Dr. Harmand, with the habitat given above.—J. D. Hooker.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary; 7, capsule; 8, seed. ***All enlarged.***

J.D.Hooker anal.

Tabula 2924.

IMPATIENS VAGANS, *Hook. f.*

Balsaminaceae.

I. vagans, *Hook. f. in Lecomte, Notul. Systemat.* 1 (1909), 11 ; herba pubescens, flaccida, vage ramosa, foliis oppositis subsessilibus ovato-oblongis remote serrulatis pedicellis foliis longioribus, sepalis ovatis acuminatis, alis brevibus latis, calcare elongato, seminibus hirtis.

Herba annua, 30–40 cm. alta, pubescens vel scaberula, parvifolia et parviflora, caule gracile ramoso, ramis elongatis erectis vel decumbentibus tomentosis a basi foliosis. *Folia* 1.5–3 cm. longa, opposita, subsessilia, firma, ovata vel ovato-lanceolata, raro obovata, acuta, remote minute spinuloso-serrulata, supra scaberula, subtus pallida, basi acuta, aliquando ciliata et in petiolum 5–10 mm. longum angustata, utrinque 3–4-nervia, nervis pubescentibus ; glandulae stipulares 0. *Inflorescentia* simpliciter pedicellata ; pedicelli 2–5 cm. longi, filiformes, fructiferi haud elongati. *Flores* 1 cm. expansi, purpurei, vexillo alisque crassis. *Sepala* oblique ovata, acuminata, 6 mm. longa, tenuiter 5–7-nervia, basi rotundata. *Vexillum* cuneato-rotundatum, bilobum, ad 6 mm. latum, dorso crasse cristatum. *Alae* sessiles, 8–10 mm. longae ; lobus basalis rotundatus, distalis paullo longior, obtusus ; auricula dorsalis fere basalis, subulata. *Labelli* limbus late cymbiformis, 6–7 mm. longus, apice obtusus, aristatus ; calcar 2–2.5 cm. longum, gracile. *Filamenta* brevissima ; antherae orbiculares, connatae. *Ovarium* oblongum, obtusum, rectum. *Capsulae* 18–20 mm. longae, gibbose turgidae, breviter stipitatae, obtusae, rostratae, polyspermae. *Semina* oblonga vel obovoidea, 3–3.3 mm. longa, hirsuta.—J. D. Hooker.

Indo-China : Cambodia ; Prov. Epong. Mt. Kuang Repen, alt. 1200 m., *L. Pierre*, 610 in Herb. Mus. Paris.

Fig. 1, sepal ; 2, standard ; 3, wing ; 4, lip ; 5, stamens ; 6, ovary ; 7, capsule ; 8, seed. *All enlarged.*

Tabula 2925.

IMPATIENS NOTOPTERA, *Hook. f.*

Balsaminaceae.

I. notoptera, *Hook. f. in Lecomte, Notul. Systemat.* 1 (1909) 14; herba elata, ramosa, glaberrima, succosa, parvifolia, foliis alternis ovatis subserrulatis, sepalis late ovatis acuminatis, vexillo bilobo dorso cristato cuspidato acuto, alarum lobis subaequalibus apice retusis, labelli calcare gracillimo, seminibus glaberrimis.

Herba succosa, erecta, 30–40 cm. alta, ramosa, parviflora, caule robusto, ramis gracilibus foliosis. *Folia* 4–6 cm. longa, alterna, petiolata, exsiccata membranacea, ovata, acuta vel obtusa, integerrima vel minute serrulata, basi in petiolum 2–4 cm. longum angustata, nervis utrinque 6–8. *Inflorescentia* simpliciter pedicellata; pedicelli florentes foliis breviores, fructiferi longiores. *Flores* ad 2 cm. expansi. *Sepala* 2, ovato-rotundata, cuspidata, 5 mm. longa, 3-nervia. *Vexillum* oblate quadratum, ad 8 mm. latum, bilobum, costa dorso alata apice longe cuspidata. *Alae* sessiles, 7 mm. longae; lobi subaequales, obcordati, sinubus setiferis; auricula dorsalis rotundata. *Labelli* limbus parvus, 4 mm. longus, scaphiformis, ovatus, acutus; calcar gracile, 2–2.5 cm. longum. *Filamenta* brevia, subulata; antherae orbiculares, connatae. *Ovarium* breve, fusiforme. *Capsulae* 1–1.5 cm. longae, falcatae, medio gibbose turgidae, subsessiles, acute rostratae, polyspermae. *Semina* 3–3.5 mm. longa, oblonga vel obovoidea, glabra, minute granulata, opaca, fusca.—J. D. Hooker.

Indo-China: Cambodia; Song Treng, *Pierre.*

Fig. 1, sepal; 2 and 3, standard; 4, standard and lip; 5, wing; 6, back and front view of stamen; 7, ovary; 8, capsule; 9, seed. *All enlarged.*

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TABULA 2926.

ARISTOGEITONIA LIMONIIFOLIA, *Prain.*

EUPHORBIACEAE. Tribus PHYLLANTHEAE.

A. limoniifolia, *Prain in Kew Bull.* 1908, p. 438. Species unica.

Arbor, innovationibus parcissime puberulis. *Folia* petiolata, petiolis puberulis valde inaequalibus 0·5–4·5 cm. longis, nunc 1-foliolata nunc 2–3-foliolata foliolis glabris coriaceis in eodem folio saepe inaequalibus ovato-lanceolatis acutis basi cuneatis margine integerrimis 3–8 cm. longis 1·25–3·5 cm. latis, nervo mediano distincto praesertim subtus, nervis secundariis 8–12-jugis subtus gracilibus supra vix manifestis; stipulae subulatae, 6 mm. longae. *Perianthii* ♂ *segmenta* triangularia, acuta, ♀ ovata, breviter acuminata, extra puberula; glomeruli floresque parvuli. *Capsula* 1·25 cm. longa lataque. *Semina* 8 mm. longa, 5 mm. lata.

TROPICAL AFRICA: Lower Guinea; Angola, Loanda Dist., *Gossweiler*, 457.

The genus *Aristo geitonia* differs from the other genera of the tribe *Phyllantheae* which have digitately compound leaves in having the perianth segments 2-seriate in the flowers of both sexes and in having the flowers in clusters in the axils of fallen leaves.—D. PRAIN.

Fig. 1, male flower; 2, the same, with perianth segments and half of the stamens removed to show rudimentary ovary; 3, glomerule of female flowers; 4, female flower; 5, the same, with perianth segments removed to show disk; 6, transverse section of ovary; 7, cluster of fruits. *All enlarged except* 7, *which is of natural size.*

Tabula 2927.

HETERANTHOECIA ISACHNOIDES, *Stapf.*

Gramineae. Tribus Paniceae.

Heteranthoecia, *Stapf.* Genus novum *Isachnae* et *Coelachnae* arcte affine et quasi intermedium, ab illa anthoeciis valde heteromorphis, summo femineo, ab hac anthoeciis ob internodium rhachillae brevissimum maxime approximatis, ab utraque inflorescentiae indole distinguendum.

Spiculae ambitu oblique ovatae, parvulae, 2-florae, in facie inferiore ramorum panicularum applanatorum sessiles, 2-seriatae, alternae : rhachilla internodiis brevissimis, ultra anthoecium superum haud producta, inter glumas tarde, sub valvis—imprimis sub superiore—facilius, disarticulata, tandem etiam gluma infima delabente. *Glumae* similes, subaequales, 5-nerves. *Anthoecium inferum* sub anthesi hians, hermaphroditum, e glumis exsertum, callo minuto, a latere visum oblique oblongum, subacuminatum vel lanceolatum, subglabrum ; valva tenuiter papyracea, tenuiter 5-nervis ; palea valvae aequilonga, tenuiter 2-nervis ; lodiculae cuneatae, 2 ; stamina 3, antheris lineari-oblongis ; styli distincti, breves ; stigmata plumosa, lateraliter exserta. *Anthoecium superum* femineum et imo apice excepto clausum, raro hermaphroditum, quam inferum multo minus, glumis superatum, callo minuto, a dorso paulo compressum et ellipticum, undique pubescens ; valva pertenuis, obscurissime 5-nervis ; palea valvae aequilonga et ab ea more *Panici* amplexa, eadem substantia, tenuissime 2-nervis ; lodiculae cuneatae 2, ovarium subaequantes ; stamina interdum ad filamenta tenuissime capilliformia reducta, saepissime vero suppressa ; styli distincti, breves ; stigmata angusta, plumosa, ex apice anthoecii exserta. *Caryopsis* ellipsoidea vel obovoideo-globosa, in anthoecio suo vix mutato inferior laxe, superior arcte inclusa. *Embryo* minutus.—Gramen *annuum ; culmi e basi ascendentes, ad vel infra medium ramosi, graciles, multinodi.* Folia *laminis lanceolatis patulis.* Inflorescentia *stricta, simpliciter ramosa, rhachis internodiis in latere ramum respiciente excavatis quasi ad ejus receptionem, ramis brevibus patulis applanatis pungentibus spiculas in facie inferiore 2-seriatas arcte aggregatas gerentibus.*

H. isachnoides, *Stapf.* Species unica.

Culmi 15–20 cm. alti, basi radicantes, glabri, internodiis ad 15 vel pluribus e vaginis (praeter summa) exsertis. *Foliorum* vaginae arctae vel

superiores tumidulae, 5–10 mm. longae, ad margines superiores plerumque pilosae, ad nodos glabrae vel pubescentes ; ligulae linea pilorum notatae ; laminae lanceolatae, acutae, 1·2–2 cm. longae, 3–5 mm. latae, rigidulae, infra adpresse pilosae, ad 20-nerves, nervis arcte approximatis supra prominentibus asperulis. *Inflorescentiae* (a ramo infimo) 2–5 cm. longae, axi angulari vel superne applanato angulis laevibus ; rami 8–2, patentes, infimi 5–7 mm. longi, dorso subconvexi et laeves, ad margines pilis tenuibus rigidis tuberculo insidentibus ciliati. *Spiculae* 1·7–2 mm. longae. *Glumae* paulo 1 mm. excedentes. *Anthoecium superum* vix 0·8 mm. longum, valva ad margines pilosula. *Antherae* anthoecii inferioris 0·8 mm. longae. *Caryopsis* 0·5–0·6 mm. longa. *Embryo* 0·18 mm. longus, scutello late elliptico.

Tropical Africa : Northern Nigeria ; Nupe, in swamps *Barter*, 1348 : French Congo ; Snussi Country (Chari oriental), at the sources of the Ndelle River, *Chevalier*, 6825.

There can be no doubt as to the affinity of this remarkable grass ; the difficulty lies rather with its taxonomic status. whether it should be treated as a distinct genus, and if not, to which of the two genera named in the differential diagnosis, viz. *Isachne* and *Coelachne*, it should be referred. *Coelachne* was placed by Bentham with the *Aveneae* in Bentham and Hooker's Genera Plantarum, and Hackel treated it in the same way in his classification of the grasses in Engler and Prantl's Natürliche Pflanzenfamilien. The former, however (Journ. Linn. Society, vol. xix. p. 93), originally referred it to his tribe *Isachneae*, a conception very much more in accord with the structure and the whole facies of the grass. In fact those who are inclined to sink such genera as *Digitaria* and *Tricholaena* in *Panicum* on account of the occurrence of connecting or converging species, will perhaps find no difficulty in reducing *Coelachne* to *Isachne* ; but to be consistent they would have to merge *Isachne* in *Panicum*, and further unite *Panicum* with *Paspalum*. As I do not think that our classification of the grasses would thereby gain in clearness or become more manageable, I prefer smaller genera which, on the whole, can be readily grasped, although they may, in one, or even more than one, direction 'pass' into other genera. If, on this ground, *Isachne* and *Coelachne* are allowed to stand as distinct genera, *Heteranthoecia* may as well claim the same status. They have in common the tendency—in *Heteranthoecia* and *Coelachne* absolute—to produce two fertile florets, and correlated with it the tendency towards disarticulation of the rhachis between them and to a lesser degree below them. instead of shedding the whole spikelet as is the case in the more typical *Paniceae* where each spikelet develops only one grain. In *Isachne*, the upper floret is always hermaphrodite and has the typical Panicum-structure. The lower is sometimes male, and such forms might purely technically be claimed for *Panicum*. It also shows frequently, even if hermaphrodite, that approach in shape and structure of its valves to the involucral glumes which is so characteristic of the reduced lower floret of *Panicum*. In *Heteranthoecia*

and *Coelachne* the lower floret is always hermaphrodite and fertile; but its valve still repeats to a considerable degree the features of the preceding glumes. On the other hand the upper floret is more specialised and typically female. It is in both genera termina in the sense in which it is so in *Panicum*, and its close position to the lower floret, owing to the reduction of the intervening internode as well as the shape of its valve and palea and the way in which they envelop the grain are distinctly 'panicoid.' In *Coelachne*, however, the internode between the florets is lengthened, and the upper floret, which is carried away from the lower to a degree quite unusual in *Paniceae*, is also less 'panicoid.' The peculiar structure of the panicle, with its flattened, pungent branches and secund, biseriate, sessile spikelets has no parallel in *Isachne* or *Coelachne*; but considering the wide range of modifications we meet with in the inflorescences of *Panicum* and *Paspalum*, not much stress can be laid upon it as a generic character, although it is certainly useful practically. No *Coelachne* is so far known from the African continent, nor do any of the African species of *Isachne* approach *Heteranthoecia* more than in the general way described above, so that geographically also the latter appears to be separated from its allies. It should be noted that the styles are not plumose to the base as shown, by oversight, in the plate, but are glabrous below.—O. STAPF.

Fig. 1, spikelet with part of axis; 2, lower glume; 3, upper glume; 4, pair of anthoecia (florets); 5, palea and flower of a young lower floret; 6, hermaphrodite flower, seen from the back; 7 and 8, grains. *All enlarged.*

Tabula 2928.

BRACHYLAENA HUTCHINSII, *Hutchinson*.

Compositae. Tribus Inuloideae.

B. Hutchinsii, *Hutchinson in Kew Bull.*, 1910, p. 126; affinis *B. huillensi*, O. Hoffm. et *B. Meranae*, O. Hoffm., ab illa foliis lanceolatis vel oblanceolatis basi longe attenuatis, ab hac foliis petiolis et paniculis minoribus differt.

Arbor 27–30 m. alta, cortice laevi pallide cinereo fere albo; ramuli floriferi late sulcati, juniores pallide tomentelli. *Folia* lanceolata vel oblanceolata, apice sensim et acute acuminata, basi in petiolum acute attenuata, 4·5–10 cm. longa, 1–2·5 cm. lata, tenuiter coriacea, supra parce lanata, demum glabra, arcte reticulata, subtus lanato-tomentosa, nervis lateralibus utrinque 10–11 subtus elevatis arcuatis prope marginem divaricatis, venis subtus plerumque inconspicuis; petioli usque ad 7 mm. longi, lanati. *Paniculae* lanatae, in axillis foliorum saepius delapsorum apices versus ramorum dispositae; ♂ laxae, pedunculatae, ♀ densae, subsessiles; bracteae oblongae, obtusae, 2·5 mm. longae. *Capitula* ♂ breviter pedicellata, circiter 12-flora. *Involucri* bracteae 3-seriatae, extus parce lanatae, intus concavae, glabrae et nitidae; exteriores ovato-lanceolatae, obtusae vel subacutae, 2·5 mm. longae, 1 mm. latae, interiores oblongo-lanceolatae, subacutae, dorso leviter carinatae, 4 mm. longae, 1·25 mm. latae. *Achaenii* rudimentum brevissimum. *Pappi* setae valde inaequales, minute barbellatae, usque ad 3 mm. longae. *Corolla* tubulosa, ad medium 5-lobata, glabra; tubus 2 mm. longus, lobis linearibus subacutis. *Stylus* integer, apice subclavatus. *Capitula* ♀ subsessilia, circiter 5-flora. *Involucri* bracteae quam in ♂ paullo majores. *Achaenia* oblonga, subteretia, 5 mm. longa, 1·5 mm. diametro, pilosa. *Pappi* setae 2-seriatae, minute barbellatae, exteriores 4 mm. longae, interiores 6 mm. longae. *Corollae* tubus cylindricus, 5 mm. longus, glaber, lobis 5 inaequalibus usque ad 1 mm. longis. *Stylus* exsertus, teres, bifidus, glaber.

British East Africa: Nairobi, *Battiscombe*, 27, 54; *Hutchins*.

The species here figured is the most northern outlier of this small and interesting genus which was until recently known only from South

Africa (7 species) and Madagascar (1 species). There are, however, 3 species now known from Tropical Africa, *B. huillensis*, O. Hoffm., from Angola, *B. rhodesiana*, S. Moore, from the Matoppo Hills, and the species here described.

Mr. E. Battiscombe, assistant to Mr. D. E. Hutchins of the British East African Forestry Department, has sent to Kew two photographs of the trees, which give an excellent idea of their habit, and a third showing the appearance of the bark. The trees appear to grow in clumps in the savannah forests near Nairobi, and according to Mr. Battiscombe they occur also in the forests nearer the coast. They attain a height of 90–100 ft., at an elevation of 5000-6000 ft. ; the crown is thin and confined to the uppermost fourth of the stem ; the bark is described as almost smooth, light grey to almost white, peeling off in long narrow shreds ; the timber is white, hard, easily worked, and scented when freshly cut ; it splits easily, is durable, and is not subject to the ravages of termites.—J. Hutchinson.

Fig. 1, a male flowering branch ; 2, capitulum of male flowers ; 3, male floret ; 4, seta of the male pappus ; 5, anthers ; 6, a female flowering branch ; 7, female flower ; 8, setae of the female pappus. *Nos.* 1 *and* 6 *of natural size, the others enlarged.*

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TABULA 2929.

PROTOMEGABARIA STAPFIANA, *Hutchinson*.

EUPHORBIACEAE. Tribus PHYLLANTHEAE.

Protomegabaria, *Hutchinson*. Genus novum affine *Thecacori*, A. Juss., et *Maesobotryae*, Benth., ab utraque bracteis, nempe bractea exteriore solitaria plana, intermedia cupulari alabastra obtegente, interioribus ad pedicellorum basin solitariis, disco ± sepalorum basi adnato distinguendum.

Flores dioici, apetali. *Fl.* ♂ : *Sepala* 5, imbricata. *Disci* glandulae 5, cum filamentis alternantes, magnae, carnosae, contiguae. *Stamina* 5, sepalis opposita ; filamenta libera ; antherae introrsae, loculis parallelis contiguis longitudinaliter dehiscentibus. *Ovarii* rudimentum columnare, integrum vel bipartitum, carnosum. *Fl.* ♀ : *Calyx* fere maris. *Discus* sepalis intus adnatus, cupularis, integer, glaber. *Ovarium* 3-loculare ; styli 3, demum recurvo-patuli, apice bifidi vel bilobi ; ovula in loculis gemina. *Capsula* magna, subglobosa vel oblongo-ellipsoidea, primo in coccos 2-valves dissiliens, columellam persistentem relinquens, demum exocarpio crustaceo tenui in sectiones sex e basi fisso, endocarpio corneo. *Semina* non visa.—Arbores. Folia *alterna, petiolata, integra, penninervia.* Flores *parvi, racemosi vel subspicati ; racemi simplices, axillares vel extra-axillares, solitarii vel gemmati ; bracteae flores subtendentes 3-seriatae, bractea exterior solitaria ovata, intermedia solitaria cupularis alabastra obtegens, interiores 3 ad basin pedicellorum solitariae.*

Species 2, in Africa tropica.

P. Stapfiana, *Hutchinson* (comb. nov.) : species foliorum costa et nervis lateralibus subtus pubescentibus, ovarii rudimento bipartito distincta.

Arbor circiter 16 m. alta ; ramuli robusti, glabri. *Folia* elongato-oblonga vel elongato-obovata, apice rotundata vel brevissime et obtuse acuminata, basi plus minusve attenuata, 15-40 cm. longa, 8-16 cm. lata, tenuiter chartacea vel membranacea, integra, supra glabra, subtus in costa et nervis lateralibus pubescentia, nervis lateralibus utrinque 10–17 sub angulo 45° a costa divergentibus prope marginem anastomosantibus subtus prominentibus, nervis transversis parallelis gracilibus,

venis vix prominulis ; petioli 4–5 cm. longi, apice incrassati et rugosi, glabri ; stipulae non visae, evidenter deciduae. *Racemi* ♂ circiter 6·5 cm. longi ; axis sulcatus, glaber ; bractea exterior ovato-rotundata, leviter ciliata, intermedia cupularis, parce ciliolata, interiores 3 ovatae, ciliatae et pubescentes, omnes submembranaceae ; pedicelli breves. *Sepala* oblonga, apice inflexa et fimbriata. *Filamenta* glabra, quam sepalis duplo breviora. *Disci* glandulae magnae, carnosae, glabrae. *Ovarii* rudimentum bipartitum, segmentis apices versus leviter papillosis. *Racemi* ♀ circiter 4 cm. longi ; axis sulcatus vel angulatus, glaber ; bracteae ovato-lanceolatae, obtusae, 3 mm. longae, 1 mm. latae, tenuiter coriaceae, glabrae. *Sepala* inaequalia, ovato-lanceolata, obtusa, 4 mm. longa, coriacea, utrinque glabra. *Discus* glaber. *Ovarium* leviter trilobum, glabrum : styli glabri. *Capsula* subglobosa vel oblongo-ellipsoidea, 4–5 cm. diametro, exocarpio crustaceo tenui, endocarpio corneo fere 1·5 mm. lato. *Semina* non visa.—*Megabaria oboratum*, Pierre MSS. *Maesobotrya Stapfiana*, Beille in Bull. Soc. Bot. Fr., vol. lvi. mém. viii. p. 121.

Tropical Africa : Ivory Coast ; Malamalasso, *Chevalier*, 16249 : Gold Coast ; Eastern Akim, Konkan, *W. H. Johnson*, 596 ; Kwahu District, *Thompson*, 92 : Gaboon : *Klaine* (colls. Aug. 1897 and May 1899), 575 ; without date, *Klaine*, 2314.

P. macrophylla, *Hutchinson* (comb. nov.) ; species foliorum costa et nervis lateralibus utrinque glabris, ovarii rudimento indiviso distincta.

Arbor parva, circiter 6 m. alta ; ramuli robusti, glabri. *Folia* oblongo-elliptica vel elongato-obovata, apice breviter acuminata, basi rotundata vel angustata, 18–40 cm. longa, 5–9 cm. lata, rigide chartacea, integra, utrinque glabra, nervis lateralibus utrinque 10–20 prope marginem anastomosantibus subtus prominentibus, nervis transversis subparallelis indistinctis : petioli 4–8·5 cm. longi, apice incrassati et leviter rugosi, glabri ; stipulae non visae. *Racemi* ♂ solitarii vel geminati, 10–13 cm. longi ; axis angularis vel profunde sulcatus, glaber ; bractea exterior late ovata, glabra, intermedia cupularis ut in *P. Stapfiana*, interiores obovatae vel oblanceolatae, membranaceae, minute ciliolatae ; pedicelli brevissimi, glabri. *Sepala* ovata, obtusa, extra glabra, intus basin versus parce pilosa. *Filamenta* brevia. *Disci* glandulae magnae, carnosae, glabrae. *Ovarii* rudimentum brevissimum, columnare, integrum, glabrum. *Racemi* ♀ ut in ♂ ; bracteae ovatae, obtusae, 2 mm. longae, coriaceae, glabrae ; bracteolae connatae, cymbiformes, glabrae ; pedicelli 2 mm. longi. *Sepala* ovato-lanceolata, obtusa, 2 mm. longa, 1 mm. lata, crassa, coriacea, utrinque glabra. *Discus* tenuis, glaber. *Ovarium* ovoideum, 3-lobum, glabrum ; styli breves, bilobi, primum erecti, demum recurvi, glabri. *Megabaria Klaineanum*, Pierre MSS. ; *Baccaurea macrophylla*, Pax in Engl. Bot. Jahrb. vol. xxviii. p. 21, non Müll. Arg.

Tropical Africa : Cameroons ; Batanga, in moist forest, *Dinklage*, 1180 : Gaboon : *Klaine* (coll. Aug. 1898), 575, (coll. Feb. 1899), 25.

Owing to the lamented death of M. Pierre the two species here described have not been hitherto published under their correct genus. Pierre had three species in manuscript under the generic name of *Megabaria*, *M. Trillesii*, *M. obovatum* and *M. Klaineanum*.

The first of these was published by De Wildeman, but unfortunately without a description (Etud. Fl. Bas- et Moy.-Cong. vol. ii. p. 284). It has, however, been described along with another species from Uganda in the *Kew Bull.* 1910, p. 57. *M. Trillesii* therefore will have to be regarded as the type of the genus *Megabaria*. The two other species are not congeneric with *M. Trillesii*, but Pierre appears to have intended them to be the types of his new genus, for he had excellent detailed drawings distributed with these specimens, but not with those of *M. Trillesii*. He seems to have at first regarded this last species as belonging to *Thecacoris*, for on Trilles's label in the Kew Herbarium there is written in Pierre's handwriting 'Thecacoris ? Trillesii, Pierre.' From *Thecacoris*, however, *M. Trillesii* is at once distinguished by its paniculate inflorescence and loculicidally dehiscent capsule, and *Protomegabaria* is easily recognised by its racemose inflorescence with the peculiar arrangement of the male bracts, and by the absence of petals in the male flowers.—J. Hutchinson.

Fig. 1, male bracts, the middle one enclosing the buds; 2, an expanded male flower; 3, stamen; 4, female flower with one sepal attached, showing the adnate disk; 5, sepal and adnate disk; 6, capsules; 7, cocens of capsule. *All enlarged except Nos.* 6 *and* 7.

M.S.del et lith

Tabula 2930.

ARUNDINARIA TESSELLATA, *Munro.*

Gramineae. Tribus Bambuseae.

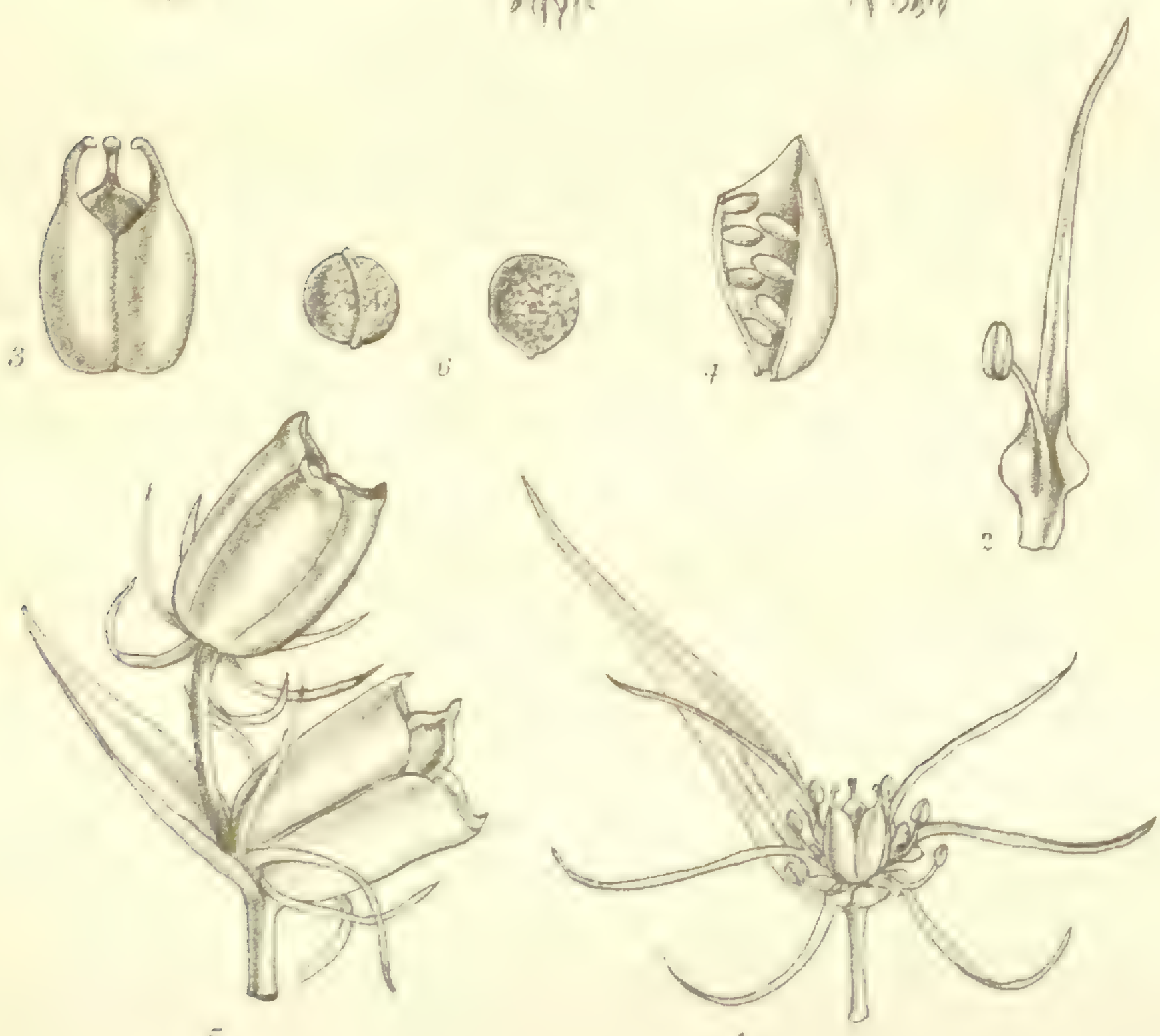
A. tessellata, *Munro in Trans. Linn. Soc.* vol. xxvi. p. 31 ; *Stapf in Dyer, Fl. Cap.* vol. vii. p. 748 et *in Kew Bull.* 1909, p. 59 ; nulli *Arundinariae* speciei arcte affinis, ob inflorescentias spathiferas et folia conspicue tessellata *A. spathiflorae,* Munro, comparanda, sed spiculis 2-floris et glumarum indole distincta.

Frutex interdum arborescens, 1·5–6 m. altus ; culmi basi ultra 8 mm. diametro, fistulosi—uti rami foliati—graciles, approximati, teretes, laevissimi, ramorum internodiis raro 5 cm. excedentibus. *Foliorum* vaginae ad ramorum bases ortae laminis destitutae, scariosae vel subscariosae, striatae, laeves, caeterae coriaceae, arctae, leviter striatae, praeter margines exteriores superne ciliatos et ora fugaciter fimbriata glabrae ; ligulae obtusae, plerumque breves, rarius ad 4 mm. productae ; laminae perfectae 3–4, versus ramulorum apices approximatae, lanceolatae vel lineari-lanceolatae e basi attenuata vel rotundata, breviter acutae vel longe in acumen tenuissimum productae, 6–12 cm. longae, 9–14 mm. latae, coriaceae, interdum subglaucae, ad basin parcissime pubescentes, ad margines spinuloso-ciliolatae (juniores quidem), caeterum glaberrimae, nervis lateralibus primariis utrinque 3 (rarius 4), ob venas transversas approximatas et distinctas plerumque eximie tenuiterque tessellatae. *Racemi* breves, circiter 4–5-spiculati, in ramis florentibus undique ex axillis foliorum emortuorum ortis, vaginis albido-stramineis emarcidis angustis superne longe attenuatis eos saepe paulo superantibus suffulti, cum vaginis foliorum annotinorum in amplam paniculam spuriam dispositi. *Spiculae* praeter imas interdum bractea racemum aequante suffultas ebracteatae, breviter pedicellatae, 16–18 mm. longae, 2-florae ; rhachilla producta, glabra, anthoecium imperfectum gerens. *Glumae* aequales, lanceolatae, acuminatae, 12–13 mm. longae, utrinque 5-nerves, venis transversis nonnullis. *Valvae* a latere visae suboblique lanceolatae, subacuminatae, 14–15 mm. longae, virescentes, nervis utrinque 4–5, venis transversis numerosis conspicuis. *Paleae* 11–13 mm. longae, carinis superne asperis, nervis extracarinalibus utrinque 2–3, venis transversis tenuissimis nonnullis. *Lodiculae* 3, obovato-ellipticae, ciliatae, 2 mm. longae, postica paulo

minor. *Stamina* 3; antherae 8 mm. longae.—*Nastus tessellatus*, Nees, Fl. Afr. Austr. p. 463; Steud. Syn. Pl. Glum. vol. i. p. 333.

South Africa: high mountains from Queenstown and Stockenstrom Divisions to the Drakensbergen, from 1200–2400 m.—O. Stapf.

Fig. 1, junction of leaf-sheath and blade and ligule; 2, part of blade, seen from below; 3, spikelet; 4, valve; 5, palea; 6, young flower, with lodicules detached; 7, young pistil. *All enlarged.*



Tabula 2931.

NEODREGEA GLASSII, *C. H. Wright.*

Liliaceae. Tribus Anguillarieae.

N. Glassii, *C. H. Wright in Kew Bull.* 1909, p. 309. Species unica.

Herba 5 cm. alta. *Bulbus* ovoideus, 6 mm. diametro, tunicis obscure brunneis laevibus membranaceis vestitus. *Caulis* erectus, filiformis, siccitate sulcatus, viridis. *Folia* 2, lineari-lanceolata, acuminata, 3 cm. longa, 4 mm. lata, glaberrima, membranacea; folium inferius longe vaginans, superius amplexicaule, quam inferius minus. *Spica* floribus 2–4 distantibus composita; bracteae foliis similes, sed multo minores. *Perianthii* segmenta patentia, 7 mm. longa, 0·3 mm. lata, angustissime lanceolata, in parte superiore fere filiformia, basi supra unguem auriculata. *Stamina* 2 mm. longa; filamenta filiformia; antherae subglobosae, dorsifixae. *Ovarium* 2 mm. longum, viride; styli 3, subulati, ad angulos apicales exteriores ovarii affixi; stigmata punctiformia. *Capsula* loculicide dehiscens. *Semina* lenticularia, brunnea.

South Africa: Cape Colony; Albany Div., near Grahamstown. *Glass*, 674; Port Elizabeth Div., in damp ground, Cradock Place and Baakens River, *J. L. Drege.*

Neodregea is allied to *Dipidax*, Laws., but differs in having the carpels divergent at their apices with the styles at the outer angles. This character gives the pistil the appearance at first sight of being apocarpous. A fruiting specimen of this plant was received at Kew from Mr. James Glass in 1896, but flowers remained unknown until they were discovered by Mr. J. L. Drege in May 1909, and forwarded to Kew by Dr. S. Schönland, Director of the Albany Museum, Grahamstown. This species has the habit of a dwarf *Ornithoglossum*, the flower (except the ovary) of *Androcymbium*, and the ovary of *Veratrum*, but in the sum of its characters it agrees most with *Dipidax*. Although the perianth-segments are so narrow, yet they bear auricles just above the claw, such as are found more highly developed in the genus *Androcymbium*, and are just indicated in *Dipidax*.—C. H. Wright.

Fig. 1, flower with subtending bract; 2, perianth-segment and stamen; 3, pistil; 4, one carpel opened; 5, fruiting branch; 6, seeds. *All enlarged.*

M.S. del et lith

Tabula 2932.

XYLIA KERRII, *Craib et Hutchinson.*

Leguminosae. Tribus Adenanthereae.

X. Kerrii, *Craib et Hutchinson in Kew Bull.* 1909, p. 357; a *X. dolabriformi*, Benth. foliis subtus velutinis, antheris eglandulosis recedit.

Arbor, ramulis glabrescentibus primo brunneo-tomentellis, ramis irregulariter canaliculatis. *Folia* petiolata, bipinnata, pinnis unijugis, petiolis 2–3·5 cm. longis apice glandula majuscula ornatis puberulis; rhachis 8·5–10 cm. longa, basi incrassata; foliola utrinque 3–5, plerumque opposita, elliptica vel oblongo-elliptica, breviter acuminata, obtusa, basi rotundata vel leviter cordata, usque ad 10 cm. longa, 5 cm. lata, chartacea, reticulata, matura supra glabra, subtus velutina, nervis lateralibus utrinque 7–9 arcuatis utrinque conspicuis; petioluli circiter 2 mm. longi, teretes, tomentosi, inter eos glandula conspicua; stipulae subulatae; stipellae lanceolatae. *Capitula* multiflora, axillaria, solitaria vel fasciculata, pedunculis 3·5–7 cm. longis sulcatis brunneo-pubescentibus. *Bracteae* filiformes; bracteolae elongato-spathulatae, superne subteretes, 3·5 mm. longae, ferrugineo-pubescentes. *Calycis* tubus 2–3 mm. longus, extus ferrugineo-pilosus; lobi 1 mm. attingentes, deltoideo-rotundati, extus ferrugineo-tomentosi. *Petala* oblanceolata, obtusa, basi attenuata, 4 mm. longa, 1 mm. lata, extus ferrugineo-pilosa. *Stamina* 10; antherae brevissime apiculatae. *Ovarium* oblique ellipsoideum, 2 mm. longum, ferrugineo-tomentosum; stylus 5–7 mm. longus, truncatus, glaber; ovula 8. *Legumen* lignosum, durum, compressum, subfalcatum, 12 cm. longum, 4 cm. latum. *Semina* 6, compressa, elliptica, 1·2–1·5 cm. longa, 0·8–1 cm. lata, nitida.

Indo-China: Siam; Chiengmai, foot of Doi Sootep, about 330 m., *Kerr*, 547: Burma; Tharrawaddy District, *Lace*, 2780.

Recent investigations go to show that the 'Pyinkado' wood obtained from the so-called *Xylia dolabriformis* is not quite identical with the wood obtained from the tree which passes under that name in the Indian Peninsula. From the material preserved in Herb. Kew it is

impossible to decide definitely whether the Indian species extends to Indo-China. Since ' Pyinkado ' is one of the most important timbers grown in Burma, it would appear very desirable that Forest Officers in Burma should collect botanical specimens of the Xylias in their several districts, so that it might be ascertained what share the subject of our plate takes in the supply of that timber.—W. G. Craib.

Fig. 1, bracteole ; 2, flower ; 3, petal ; 4, anther, back and front views with part of filament ; 5, ovary ; 6, ovary in longitudinal section ; 7, valve of fruit with seeds. ***All enlarged except 7, which is of natural size.***

TABULA 2933.

ARRABIDAEA CRASSA, *Sprague.*

BIGNONIACEAE. Tribus BIGNONIEAE.

A. crassa, *Sprague* (comb. nov.) ; affinis *A. trichocladae*, Bur. et K. Schum., a qua ramorum inflorescentiaeque indumento brevi recedit.

Frutex scandens. *Rami* elongati, subteretes, striolati, primum pubescentes, demum glabrescentes, circiter 5–6 mm. diametro 15–20 cm. infra foliorum par supremum. *Folia* trifoliolata ; petiolus 2·5–4 cm. longus, tomentellus, apice incrassatus ; petioluli laterales 4–5 mm. longi, terminalis 11–14 mm. longus ; foliola ovata, ex apice rotundato vel retuso cuspidata, basi subcordata, 4–5-nervia, 7·5–10·5 cm. longa, 4·5–7 cm. lata, supra exsiccando brunnea, puberula praesertim in nervis, nervis venulisque impressis, subtus tomentella nervis prominentibus ; foliola lateralia obliqua. *Thyrsus* terminalis, multiflorus, tomentellus ; pedunculus 23·5–27 cm. longus ; pedicelli 1·3–2 cm. longi. *Calyx* campanulatus, truncatus, 8–9 mm. longus, extra tomentellus, superne glandulis majusculis irregulariter pluriseriatis, intus glaber. *Corolla* campanulato-infundibuliformis, in toto circiter 3·7 cm. longa, bilabiata, extus tomentella, intus infra insertionem staminum dense glanduloso-pilosa ; tubi pars inferior subcylindrica, 1·3–1·5 cm. longa, pars superior postice ventricosa, antice leviter convexa ; labium posticum galeiforme, circiter 1·2 cm. longum, ad medium bifidum ; labium anticum patulum, lobis oblongis circiter 1·1 cm. longis. *Stamina* circiter 1·5 cm. supra basin corollae inserta, didynama, exserta ; filamenta superne antrorsum decurvata, inferne dense glanduloso-pilosa ; antherae apicifixae, thecis apice excepto sejunctis oblongo-linearibus 5–6 mm. longis, connectivo circiter 0·25 mm. producto subtruncato apice sparse pilosulo. *Discus* pulvinaris, 2 mm. altus. *Ovarium* leviter compressum, oblongum, circiter 4 mm. longum, densissime lepidotum ; ovula pro loculo biseriata, 13–14 pro serie. *Capsula* septifraga, cum dissepimento parallele applanata, oblongo-linearis, acute tetragona, apice cuspidata, in basin breviter angustata, 22 cm. longa, circiter 2·2 cm. lata, glabra, leviter tuberculata. *Semina* transverse oblonga, 1·1–1·2 cm. longa, circiter 3·5 cm. lata alis inclusis, nucleo transverse elliptico 1·3–2 cm. lato, hilo anguste oblongo 2·5–4·5 mm. longo.—*Cremastus crassus*, Miers in Proc. Roy. Hort. Soc. vol. iii. 1863, p. 187, nomen. *Distictis crassa*, Bur. et K. Schum. in Mart. Fl. Bras. vol. viii. pars 2, p. 177.

BRAZIL: Piauhy; near Oeiras, *Gardner*, 2468.

Arrabidaea crassa is apparently allied to *A. trichoclada*, Bur. et K. Schum., a native of Minas Geraes and Piauhy, of which neither fully developed flowers nor capsules are known. *A. crassa* differs from all other species of *Arrabidaea* by its exserted stamens and acutely angled, almost winged, capsule; but it agrees in other respects with that genus as extended by Bureau and K. Schumann in Mart. Fl. Bras. vol. viii. pars 2, p. 19.

On the strength of a superficial resemblance which had been noticed previously by A. P. de Candolle (Prodr. vol. ix. p. 158), Miers included *A. crassa* and *A. trichoclada* in his new genus *Cremastus*. *Cremastus* has now been restricted by Bureau and Schumann (l.c. 214) to *C. glutinosus* and its allies, and may be distinguished by the inflated membranous calyx and the indumentum of gland-tipped hairs.

The indumentum, calyx, corolla and disk of *A. crassa* are similar to those of *Distictis*, Bur., and this led Bureau and Schumann, who had not seen the capsule, to refer the species to that genus. Apart from the very different capsule, *Distictis*, Bur., may be distinguished by the thickened bases of the filaments and the pluriseriate ovules. As has been pointed out by Schumann (l.c. 175), *Distictis*, as defined by Bureau, includes none of the species originally described under that name by A. P. de Candolle (Prodr. vol. ix. p. 191); and Kuntze has recently proposed for Bureau's genus the name *Distictella* (Post et Kuntze, Lexicon, p. 182).

Distictis, DC., included three species, *D. lactiflora*, DC., *D. rigescens*, DC., and *D. artherion*, DC. The last-mentioned having been transferred to *Arrabidaea* by Bureau, the genus *Distictis*, DC., is now restricted to *D. lactiflora* and *D. rigescens*, to accommodate which Bureau founded the genus *Macrodiscus*.—T. A. SPRAGUE.

Fig. 1, bud; 2, calyx, opened to show pistil and disk; 3, lower part of corolla, opened to show insertion of filaments; 4, anthers; 5, staminode; 6, longitudinal section through ovary; 7, transverse section through ovary; 8, capsule; 9, seed. *All enlarged, except* 8 *and* 9, *which are of natural size.*

Tabula 2934.

OCOTEA USAMBARENSIS, *Engl.*

Lauraceae. Tribus Perseeae.

O. usambarensis, *Engl. in Abh. Preuss. Akad. Wiss.* (1894), pp. 51, 54 et *in Pfl. Ost-Afr.* C. 182 : *Stapf in Dyer. Fl. Trop. Afr.*, vol. vi. sect. i. p. 187 ; ab altera specie africana indumento novellarum vel totius plantae et foliis obtusis subtus glaucescentibus vel albescentibus distincta.

Arbor, ad 40 m. alta, trunco ad 3·5 m. diametro, ramulis molliter pubescentibus vel tomentosis vel praeter novellas glabris et exsiccando nigrescentibus. *Folia* approximata, alterna, subopposita vel opposita, late elliptica, utrinque obtusa, 5–6·5 cm. longa, 3·5–4 cm. lata, tenuiter coriacea, subbullata, infra glaucescentia vel albescentia, novella utrinque molliter pilosa, demum magis minusve glabrescentia, costa supra tenui, nervis lateralibus utrinque 5–7 patulis vel obliquis, venis irregulariter anastomosantibus tenuibus supra obscuris ; petiolus 4–10 mm. longus, teres, anguste canaliculatus, pubescens vel tomentosus. *Paniculae* ex axillis foliorum summorum ortae, subcorymbosae, fulvo- vel griseo-pilosae, 1·5–2·5 cm. longae, 2·5 cm. latae, pedunculis 2·5 cm. longis ; bracteae ovatae, obtusae, dense pubescentes ultra 2 mm. longae, mox deciduae ; pedicelli ad 2 mm. longi. *Perianthium* dense pubescens vel tomentellum, 5-6 mm. diametro, receptaculo turbinato 1·5 mm. alto intus pilosulo, segmentis 3 mm. longis, exterioribus elliptico-oblongis, interioribus late ovatis obtusis intus medio pubescentibus. *Stamina* florum ♂ filamentis linearibus antheras aequantibus pubescentibus vel ordinis II in dorso glabris ; glandulae ordinis III subglobosae, brevissime stipitatae ; stamina florum ♀ multo reducta. *Ovarium* in receptaculo immersum, sed ab eo liberum, ovoideum, cum stylo glabrum. *Fructus* globosus vel ellipsoideo-globosus, 8–10 mm. longus, receptaculo incrassato insidens. *Seminis* testa crustacea.

East Africa : British East Africa ; forests of Mount Kenia and the Aberdare Range, *Hutchins* ; *Battiscombe* 16 : German East Africa ; Usambara, *Holst*, 1301.

A very valuable timber tree, an account of which, by Mr. D. E. Hutchins, may be found in 'Colonial Reports'—Miscellaneous, No. 41 (1907), p. 18, under the name of Ibean camphor or 'mozaiti.' Curious galls arising from the malformation of the ovary and imitating fruits were collected by Mr. Hutchins as well as by Mr. Battiscombe.—O. Stapf.

Fig. 1, hermaphrodite flower; 2, stamen of exterior whorl, front view; 3, stamen of second whorl, back view; 4, stamen of third whorl, seen from without; 5, staminode; 6, pistil; 7, female flower; 8, same in longitudinal section; 9, cup-shaped receptacle, mature, in longitudinal section; 10, fruit with receptacle; 11, same, in longitudinal section; 12, base of embryo in longitudinal section; 13, fruit galls. *All enlarged except* 10 *and* 13, *which are of natural size.*

Tabula 2935.

PHYLLANTHODENDRON ROSEUM, *Craib et Hutchinson.*

EUPHORBIACEAE. Tribus PHYLLANTHEAE.

P. roseum, *Craib et Hutchinson in Kew Bull.* 1910, p. 23 ; ab affine *P. albo*, Craib et Hutchinson, foliis oblanceolatis, stipulis basi productis et ovario piloso differt.

Frutex 3·5 m. altus (*ex Kerr*) ; ramuli teretes, puberuli, cortice brunneo obtecti. *Folia* alterna, brevissime petiolata, oblanceolata, apice acuminata, mucronata, basi attenuata, 8–16 cm. longa, 2–5 cm. lata, subcoriacea, glabra, margine integro, nervis lateralibus utrinque 10–12 subtus prominulis ; stipulae ovato-lanceolatae, acutissimae, circiter 4 mm. longae, basi in appendicem bilobatum productae. *Flores* axillares, fasciculati. *Fl.* ♂ : *Pedicelli* usque ad 1 cm. longi, gracillimi, glabri. *Calycis* segmenta 5, subaequalia, late lanceolata, acute acuminata, 3 mm. longa, 1·5 mm. lata, uninervia, membranacea, glabra. *Disci* glandulae liberae, petaloideae, lineares, planae, apice truncatae vel rotundatae, 1·5 mm. longae, 0·25 mm. latae, glabrae. *Stamina* 3 ; filamenta in columnam 0·5 mm. altam connata ; antherae liberae, 0·75 mm. longae, connectivo in cornu 1 mm. longum glabrum producto. *Fl.* ♀ : *Pedicelli* 4 cm. attingentes. *Calycis* segmenta 6, quam maris paulo longiora. *Disci* glandulae maris. *Ovarium* 3-loculare, late ovoideum, albo-pilosum ; styli bilobati, 0·5 mm. longi, glabri, lobis obtusis. *Capsula* subglobosa, rosea (*ex Kerr*), 1·5 cm. diametro, tenuiter puberula, distincte reticulata, exocarpio membranaceo, endocarpio corneo, 0·5 mm. lato. *Semina* 7–8 mm. longa, dorso 3–3·5 mm. lata, latere excavatione auriculiformi instructa, levia, dilute brunneo-maculata.

INDO-CHINA : Siam : Chiengmai, Doi Sootep, about 730 m., *Kerr*, 697.

It is unnecessary here to repeat the excellent reasons given by Mr. Hemsley in Hooker's Icones Plantarum, tab. 2563–64, for keeping *Phyllanthodendron* separate from *Phyllanthus*. A comparison of this plate with those quoted above will show how remarkably similar the floral structure is in the two species.

The genus as it stands at present contains 3 species, all from Siam, viz. *P. mirabile*, Hemsl., *P. roseum*, and *P. album*, Craib et Hutchinson.

In Engler und Prantl's Natürliche Pflanzenfamilien, Nachtr., vol. ii. p. 37, the genus is not maintained but is reduced to a section of Phyllanthus.—W. G. Craib.

Fig. 1. ♂ flower; 2. ♂ flower with part of calyx removed, showing the petaloid disk glands and androecium; 3. anther, back view; 4, ♀ flowers with pedicels; 5. ♀ flower; 6. pistil; 7. transverse section of ovary; 8. longitudinal section of ovary; 9. fruit; 10. seed; 11. seed; 12. longitudinal section of seed; 13. seed cut transversely; 14 and 15. embryo. *All enlarged except* 4. 9. *and* 10. *which are of natural size.*

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Tabula 2936.

TITANOTRICHUM OLDHAMII, *Solereder*.

GESNERACEAE. Tribus DIDYMOCARPEAE.

T. Oldhamii, *Solereder in Ber. Deutsch. Bot. Gesellsch.* vol. xxvii. (September 27, 1909) pp. 393, 400. Species unica.

Herba perennis, rhizomate squamis carnosis obtecto, e collo copiose radicosa, caule ascendente saepe flexuoso villoso- vel sparse strigoso-hirsuto et demum fere glabrescente, pilis acutis vel in parte superiore glanduligeris. *Folia* opposita, subopposita vel alterna, longe petiolata, ovata vel lanceolato- vel elliptico-ovata, interdum subobliqua, acuta, basi rotundata vel acuta, dentata, magnitudine valde varia, ad 18 cm. longa, ad 8 cm. lata, tenuia, supra undique laxe, infra imprimis ad nervos strigilloso-hirsuta et pilis minutis glanduligeris conspersa, nervis utrinque circiter 5 prorsus curvatis tenuibus, venarum rete laxo ; petiolus 1·5–8 cm. longus, eodem indumento ac caulis. *Inflorescentia* terminalis, racemosa, interdum multiflora, subsecunda, eodem indumento ac caulis nisi multo tenuiore et densiore ; bracteae lineari-lanceolatae vel subulatae, acutae, inferiores 1–1·8 cm. longae ; bracteolae subulatae, ad basin pedicellorum sitae, 2–4 mm. longae plerumque steriles, raro cum flore rudimentario parvo ; pedicelli graciles, 0·5–1·5 cm. longi. *Calyx* alte divisus, lobis lanceolatis longe tenuiter acuminatis, dense glanduloso-pilosus, circiter 1 cm. longus. *Corolla* flava, subobliqua, anguste campanulata vel infundibuliformis, 3–3·5 cm. longa, extus sparse pilosula, lobis latis 5 mm. longis. *Capsula* oblonga, 3 mm. longa. Semina numerosissima, 0·5 mm. longa.—*Rehmannia? Oldhamii,* Hemsl. in Journ. Linn. Soc. vol. xxvi. p. 194 and in Ann. Bot. vol. ix. p. 154. *Matsumuria Oldhamii,* Hemsl. in Kew Bull., November 1909, p. 361.

FORMOSA : Tamsui, *Oldham*, 400 ; between Kimpaoli and Pachena, on dripping rocks under the shade of coarse rank vegetation, *Hancock*, 4 ; summit of Ape's Hill, growing on vertical rocks in dry caves and clefts of the mountain, *A. Henry*, 311, 1052.

The systematic position of this plant as the representative of a distinct genus of the *Gesneraceae* was pointed out independently and almost simultaneously by Solereder and Hemsley, the latter having

suggested it already twenty years ago. Its relationship to *Rehmannia*, which is also now definitely referred to *Gesneraceae*, has been so ably discussed by Solereder that nothing need be added here ; but a curious anomaly described by Hemsley requires a brief explanation. In Annals of Botany, l.c., he says of the inflorescences : ' racemi simplices vel interdum ramosi saepe valde elongati et gracillimi, supra medium proliferi, corporibus minutis fasciculatis instructi.' These anomalous racemes occur in Henry's specimen no. 311, and in one of the specimens numbered 1052. In no. 311 the terminal inflorescence is produced beyond the flowers into a flagelliform slender axis about 30 cm. long bearing in the axils of small subulate bracts and bracteoles clusters of —in the dry state—blackish bodies which consist of a short stalk and 2–4 fleshy subulate organs probably homologous to the first 2, 3 or 4 sepals. If this conception of the nature of those organs be correct, the bodies would represent rudimentary flowers. What their function is or whether they are purely teratological is not known. Similar flagelliform axes, 10–18 cm. long and extremely slender, also rise from the leaf axils of the specimen, bearing the same minute bracts and in the axils of many of them the same blackish bodies, although in much less profusion. It may be added that these bodies are very deciduous, detaching themselves at the base of the stalk. The other specimen referred to (one of the set numbered 1052) is evidently a young plant and bears two flagelliform axes, one terminal, the other axillary, with a few distant minute bracts and very few bodies of the nature described above.—O. Stapf.

Fig. 1, calyx, with front part removed, and pistil ; 2, androecium, with part of base of corolla ; 3, stamens ; 4, stigma ; 5, transverse section of ovary ; 6, capsule with two segments of calyx ; 7, seeds ; 8, flagelliform abnormal inflorescence ; 9, a cluster of modified rudimentary flowers ; 10–13, modified rudimentary flowers ; 14, hammer-shaped gland ; 15, acute hair ; 16, gland-tipped hair. *All enlarged except* 8, *which is of natural size.*

Tabula 2937.

KOLKWITZIA AMABILIS, *Graebn.*

Caprifoliaceae. Tribus Caprifolieae.

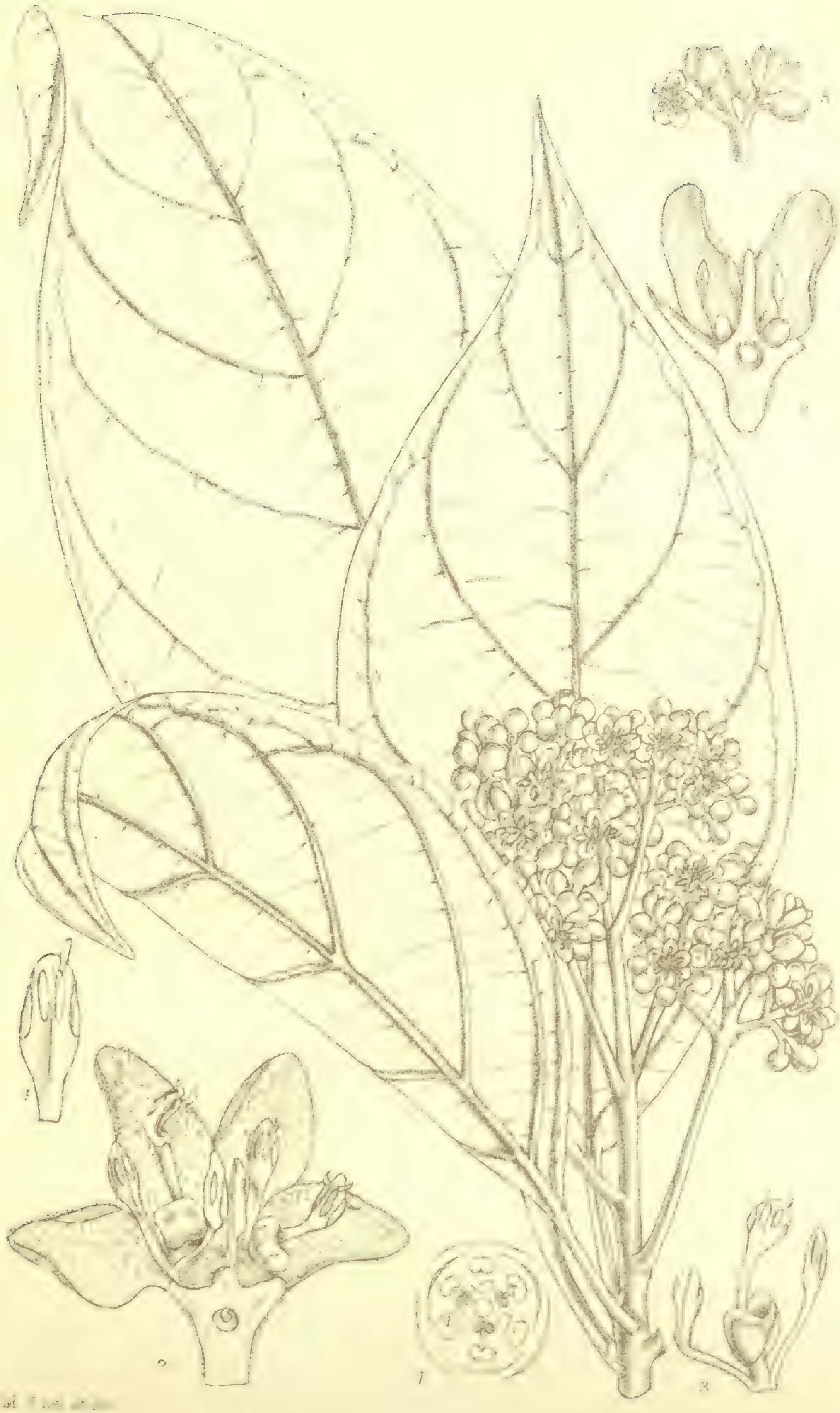
K. amabilis, *Graebn. in Engl. Bot. Jahrb.* vol. xxix. p. 593; *Hemsl. in Gard. Chron.* ser. 3, vol. xxxiii. p. 81. Species unica.

Frutex copiose ramosus, ramis hornotinis molliter hirsutis, annotinis glabratis cortice brunneo tenui tectis. *Folia* ovata, basi rotundata, apice acuta vel acuminata, denticulata, subintegra, 3 cm. longa, 1–3·5 cm. lata, superne sparsa, inferne ad nervos et ad margines densius hirto-pilosa vel villosa, nervis utrinque plerumque 3–5 tenuibus prorsus curvatis; petiolus 1–2 mm. longus. *Flores* geminati, paribus 3–9 in apice ramulorum brevium foliatorum quasi in corymbum dispositi; pedunculi filiformes, pilosi, ad 10 mm. longi; bracteae lineares vel subulatae, ad 3 mm. longae. *Receptacula* uniuscuiusque paris opposita vel unum altero altius ortum et quasi ei lateraliter insertum, dense strigilloso-pilosa, superne in stipitem brevem fere solidum contracta, 3–4 mm. longa. *Sepala* linearia, acuta, saepe flexuosa, 5 mm. longa, hirta. *Corolla* oblique tubuloso-campanulata, pallida, extus puberula, tota circiter 1–1·3 cm. longa, tubo basi antice obscure gibboso intus antice villosulo, limbo obliquo, lobo antico quam lateralia paulo longiore. *Stamina* 4, antica ad tertiam partem, postica ad medium tubi inserta; filamenta ad os attingentia; antherae late oblongae, 1 mm. longae. *Stylus* filiformis, scaberulus, 8–9 mm. longus; stigma minute trilobum. *Ovarii* loculi 3, inaequales, unus saepe cassus; ovula 2-seriata, circiter 10 in unoquoque loculo. *Fructus* per paria connati, nucamentacei, monospermi, calyce stipitato (stipite ad 4 mm. longo) coronati, crasse suberoso-costati, costis plerumque 3 in unoquoque pari, superne saepe in cornu truncatum vel subulatum et ad 4 mm. longum productis, toti dense strigosi, stipite calycigero dempto 4–5 mm. longi, interdum inaequales, alter minor, brevior vel suppressus, endocarpio corneo, loculis 2 vacuis. *Semen* ambitu oblongum, 2 mm. paulo longius; testa tenuissima. *Embryo* fere ad medium bilobus, circiter 0·35 mm. longus.

China: Shensi; Hua shan, near Gniu yu, *Giraldi*, 1725: Hupeh; Fang, on cliffs, 3000 m., *Wilson*, 2300.

The affinity of *Kolkwitzia* lies clearly with *Abelia*, from which it differs in the paired and ultimately coalescent flowers, in the production of the receptacle into a slender and rather long stalklike tube, the not enlarged, although persistent sepals, and the presence of numerous ovules in all the cells of the ovary or at least in two of them, although only one in each fruit develops into a seed. The corky ribs of the fruits with their awl- or horn-like points are, as Mr. Hemsley has pointed out, the indurated bracts which in the course of maturation are carried up on the growing receptacle, whilst the decurrent bases go to build up the ribs.—O. STAPF.

Fig. 1, pair of flowers; 2, corolla laid open; 3, stamens; 4, style; 5, longitudinal section of receptacle; 6, cross-section of same with one cell empty; 7, cross-section of another receptacle, with a row of ovules in the third cell. *All enlarged.*



Tabula 2938.

HYPODAPHNIS ZENKERI, *Stapf.*

Lauràceae. Tribus Perseeae.

Hypodaphnis, *Stapf in Dyer, Fl. Trop. Afr.* vol. vi. sect. 1, p. 185 (anglice). Genus novum *Nectandrae*, Rol., affine, sed filamentis distinctis, antherarum locellis elongatis parallelis exterioribus plane lateralibus et ovario infero differt.

H. Zenkeri, *Stapf*, loc. cit. (anglice). Species unica.

Frutex vel *arbor*, ad 9 m. alta, ramis dense foliatis, novellis dense et minutissime fulvo-pubescentibus. *Folia* ovato- vel obovato-elliptica, acute acuminata vel caudata, basi brevissime acuta vel subobtusa, 12–25 cm. longa, 6·5–7·5 cm. lata, tenuiter coriacea, primo ad nervos dense fulvo-pubescentia, cito glabrescentia, exsiccando fusca, infra pallidiora ; costa angusta, supra canaliculata, infra valde prominens ; nervi laterales utrinque 4–5, distantes, perobliqui, obscure arcuatim connecti ; venae transversae tenuissimae, parallelae, supra prominulae ; petiolus teres, leviter canaliculatus, 1·8–3 cm. longus. *Panicula* subcorymbosa, interdum paniculis ex axillis foliorum superiorum ortis aucta, 3·5–7·5 cm. longa, 5–6 cm. lata, multiflora, tenuiter ferrugineo-pubescens ; rami infimi ad 2·5 cm. (vel ultra) indivisi, inde iterum iterumque divisi, ramulis pedicellisque 1–2 mm. longis. *Perianthium* utrinque tenuiter ferrugineo- vel fulvo-pubescens vel velutinum ; segmenta subinaequalia, exteriora oblonga, 4 mm. longa, interiora ovato-oblonga, omnia sub anthesi patentia. *Stamina* floris ♂ 2 mm. longa ; filamenta ad latera tenuiter minute pubescentia, antheris sublongiora. *Stylus* 1·5–2 mm. longus cum ovarii vertice fulvo-pubescens.—*Ocotea Zenkeri*, Engl. in Engl. Jahrb. vol. xxvi. p. 385, tab. 9, fig. A.

West Africa : Cameroons ; in primeval forests, Bipinde, *Zenker*, 851, 3033, 3033*a*, Kiango, *Zenker*, 1630, Johann-Albrechtshöhe, *Staudt*, 961.

The collateral position of the locelli of the anthers and the inferior position of the ovary are well shown in Engler's figures, cited above. They are characters each of which is sufficient to exclude *Ocotea*.—O. Stapf.

Fig. 1, diagram of flower ; 2, male flower in longitudinal section ; 3, stamen of second whorl and two stamens of third whorl, with gland between them ; 4, stamen of first whorl ; 5, cluster of female flowers ; 6, female flower in longitudinal section. *All enlarged except 5, which is of natural size.*

TABULA 2939.

EREMIOPSIS CURVISTYLA, *N. E. Brown.*

ERICACEAE.

Eremiopsis, *N. E. Brown in Dyer Fl. Cap.* vol. iv. sect. 1, p. 390 (anglice). Genus habitu *Eremiae*, sed ovario 1-loculari 1-ovulato differt.

Calyx campanulatus, fere ad basin 4-lobus. *Corolla* campanulata, 4-loba. *Stamina* 8, libera ; antherae bipartitae, loculis distinctis basi calcaratis filamentis apice malleiformibus affixis. *Ovarium* 1-loculare, 1-ovulatum, ovulo pendulo ; stylus basi recurvus, deinde erectus, apice incurvus. *Fructus* indehiscens ?—Fruticulus *parvus, ericoideus.*

E. curvistyla, *N. E. Brown*, loc. cit. Species unica.

Fruticulus parvus, ramis puberulis. *Folia* ternata, patule recurva, 1·5–2 mm. longa, 0·5–0·7 mm. lata, lineari-oblonga, acuta, mucronata, supra fere plana, subtus convexa, sulcata, glabra, marginibus utrinque pilis 2–3 longis glanduliferis ciliatis. *Flores* 2–6 in fasciculis ad apices ramulorum brevium lateralium dispositi, subsessiles vel minutissime pedicellati. *Bracteae* 3, subaequales, 0·5 mm. longae, ovatae, acutae, glabrae, ciliatae, calyci adpressae. *Calyx* 1 mm. longus, fere ad basin 4-lobus ; lobi 0·3 mm. lati, elliptici, carinato-apiculati, glabri, ciliati. *Corolla* campanulata, leviter 4-angulata, glabra ; tubus 1 mm. longus ; lobi 0·5 mm. longi, erecti, rotundati. *Stamina* inclusa, glabra. *Ovarium* globoso-ovoideum ; stylus inclusus vel vix exsertus, 1·5–2 mm. longus, filiformis, basi recurvus, deinde erectus, apice incurvus.

SOUTH AFRICA : Cape Colony ; Worcester Div., without precise locality, *Niven*, also *Herb. Salisbury, Ward.*

The curvature of the style is peculiar and in itself is sufficient to distinguish this plant from other South African heaths.—N. E. BROWN.

Fig. 1, part of a branchlet with two whorls of leaves ; 2, a flower ; 3, two lobes of the calyx, with ovary and style ; 4, corolla opened and spread out ; 5, stamens, front and back views ; 6, a diagrammatic transverse section of the ovary ; 7, longitudinal section of the ovary. *All enlarged.*

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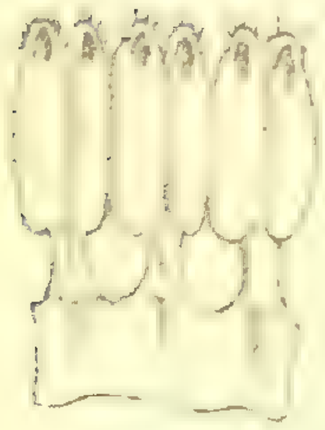

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Tabula 2940.

LEPTERICA TENUIS, *N. E. Brown.*

Ericaceae.

Lepterica, *N. E. Brown in Dyer Fl. Cap.* vol. iv. sect. 1, p. 397 (anglice). Genus *Coccospermati* affine, sed staminibus 8, ovario 1-loculari 1-ovulato et habitu valde differt.

Calyx obconicus, 4-lobus. *Corolla* obconica, 4-loba. *Stamina* 8, filamentis basi connatis, antheris connatis ecalcaratis. *Ovarium* 1-loculare, loculis 1-ovulatis; stylus brevis, validus, inclusus; stigma magnum, peltatum. *Fructus* indehiscens, pericarpio tenui tubis resiniferis percurso.—Frutex *ericoideus, ramis gracilibus.*

L. tenuis, *N. E. Brown*, loc. cit. Species unica.

Frutex ad 1 m. altus, dense ramosissimus, ramulis gracilibus parallelis minute puberulis vel fere glabris. *Folia* 3-nata, erecta, adpressa vel imbricata, 1·3–2·7 mm. longa, linearia, acuta, glabra. *Flores* axillares vel in ramulis lateralibus minutis terminales, solitarii vel 2–3-ni, subsessiles, ebracteolati. *Calyx* 1–1·3 mm. longus, obconicus, 4-angulatus, inaequaliter 4-dentatus, glaber, dentibus late ovatis acutis carinatis minutissime subciliatis. *Corolla* obconica, glabra, lobis supra stigma inflexis. *Stamina* inclusa, filamentis glabris, antheris apice bifidis minute ciliatis. *Ovarium* primum minutum, obconicum, 8-costatum, demum rhomboideo-obovatum, glabrum; stigma magnum, peltatum, marginibus erectis, demum subsessile.—*Lagenocarpus tenuis*, Benth. in DC. Prodr. vol. vii. p. 710.

South Africa: Cape Colony; Riversdale Div., summit of the Kampsche Berg, *Burchell*, 7126, Garcia's Pass, *Burchell*, 7034.

This is readily distinguished from the other South African heaths by the erect densely crowded parallel slender branchlets and minute flowers.—N. E. Brown.

Fig. 1, part of a branchlet with three whorls of leaves; 2, a flower; 3, corolla spread open; 4, stamens around the pistil; 5, three stamens; 6, anther, side view; 7, ovary, with style and stigma; 8, fruit; 9, a diagrammatic transverse section of fruit, showing resin-canals in the pericarp; 10, longitudinal section of fruit. *All enlarged.*

Tabula 2941.

PLATYCALYX PUMILA, *N. E. Brown.*

Ericaceae.

Platycalyx, *N. E. Brown in Dyer Fl. Cap.* vol. iv. sect. 1, p. 335 (anglice). Genus simillimum *Ericae*, sed calyce gamosepalo plano et ovulis solitariis differt.

Calyx gamosepalus, 4-lobus, planus, quadrangularis. *Corolla* subglobosa vel globoso-ovoidea, ore contracta, 4-dentata. *Stamina* 6 (interdum 5 vel 7), exserta, libera; antherae bipartitae, ecalcaratae. *Ovarium* 2-loculare, loculis 1-ovulatis; stylus exsertus, stigmate minuto.—Fruticulus *nanus, ericoideus.*

P. pumila, *N. E. Brown*, loc. cit. Species unica.

Fruticulus parvus, 7·5–13 cm. altus, ramis gracillimis minute cinereo-tomentosis. *Folia* minuta, 3-nata, adpressa, 1–2 mm. longa, linearioblonga, obtusa, crassa, dorso sulcata, glabra. *Flores* terminales, 2–3-ni. *Pedicelli* 1·3 mm. longi, minute tribracteati. *Calyx* planus, 4-angulatus, 1 mm. latus, glaber, ruber. *Corolla* globoso-ovoidea vel subglobosa, ore contracta, minute 4-loba, lobis vix 0·5 mm. longis rotundatis conniventibus. *Stamina* exserta, filamentis 3–4 mm. longis, antheris vix 0·5 mm. longis bipartitis muticis. *Ovarium* compresso-globosum, obtusissimum, minute albo-tomentosum; stylus 3·5 mm. longus, filiformis, glaber.

South Africa: Cape Colony; Riversdale Div., near Riversdale, *Rust*, 543.

This plant is very much like *Erica tubercularis*, Salisb., in appearance, although quite different in structure. Its flat, nearly square calyx is quite unlike that of any other South African heath.—N. E. Brown.

Fig. 1, leaves, upper and under surface; 2, a flower; 3, calyx, seen from above, with corolla, stamens and ovary removed; 4, stamens and pistil, with calyx and corolla removed; 5, anthers, side and front view; 6, ovary, with part of the style removed; 7, longitudinal section of the ovary; 8, transverse section of the ovary. *Enlarged and all copied from drawings made by Dr. H. Bolus.*

Tabula 2942.

ANISERICA GRACILIS, *N. E. Brown.*

Ericaceae.

Aniserica, *N. E. Brown in Dyer Fl. Cap.* vol. iv. sect. 1, p. 391 (anglice). Genus *Sympiezae* affine sed calyce campanulato (nec dorsaliter complanato) aequaliter 4-lobo differt.

Calyx tubuloso-campanulatus vel campanulatus, aequaliter 4-lobus. *Corolla* tubulosa, apice breviter biloba. *Stamina* 4, libera; antherae basifixae, bipartitae, ecalcaratae. *Ovarium* compressum, 2-loculare, loculis uniovulatis ovulo pendulo; stylus filiformis; stigma minutum.—Frutex *ericoideus.*

A. gracilis, *N. E. Brown*, loc. cit. Species unica.

Frutex ramosissimus, ramulis pilosis et minute pubescentibus. *Folia* 3-nata, adscendentia vel imbricata, 1·3–5 mm. longa, oblongo-linearia vel raro subovata, obtusa vel subacuta, glabra, nova parce ciliata. *Flores* capitati; capitula ovoidea vel globosa, ramulis axillaribus numerosis minutissimis pedunculiformibus 2-3-bracteatis 1-3-floris composita, floribus subsessilibus. *Calyx* 1-1·3 mm. longus, campanulatus, 4-dentatus, coriaceus, enervosus, glaber, ruber. *Corolla* 2–3 mm. longa, tubulosa, basi angustata, apice biloba, glabra, rubra. *Stamina* exserta, glabra. *Ovarium* compresso-oblongum, glabrum; stylus exsertus.—*Blaeria gracilis*, Bartl. in Linnaea, vol. vii. p. 650. *Sympieza Kunthii*, Klotzsch in Linnaea, vol. viii. p. 656 and xii. p. 230; Benth. in DC. Prodr., vol. vii. p. 705.

South Africa: Cape Colony; Caledon Div., Genadendal Mountain, 3200–5000 ft., *Galpin*, 3725, 3726; Bredasdorp Div., near Potte Berg, *Mund*, 49; Swellendam Div., mountains near Voormansbosch. *Ludwig & Beil*, and near the River Zondereinde. *Zeyher*. 3318.

Var. **hispida**, *N. E. Brown*, loc. cit. *Folia* nova dorso pilis longis parce conspersa, saepe tuberculata. *Corolla* alba vel pallide carnea.—*Sympieza Kunthii*, Klotzsch, vars. *hispida* and *brachyphylla*, Benth. in DC. Prodr. vii. p. 705. *Blaeria depressa*. Drège et *B. ericoides*, Drège ex Benth. l.c.

South Africa : Cape Colony ; Tulbagh Div., mountains near Saron, *Schlechter*, 10688 ; Stellenbosch Div., Stellenbosch, *Prior*, Lowry's Pass, *Schlechter*, 1162 ; Caledon Div., Houw Hoek, *Schlechter*, 5462, near Caledon, *Drège* ; Swellendam Div., peak near Swellendam, *Burchell*, 7301 ; Riversdale Div., Garcia's Pass, *Burchell*, 7037, Mozambique Kop, *Galpin*, 3723, Kampsche Berg, *Burchell*, 7130 ; George Div., Cradock Mountain, near George, *Burchell*, 5911.

The specific name *gracilis* is scarcely applicable to this plant, as the branches are not at all slender nor graceful, but as it is the oldest it has been retained.—N. E. Brown.

Fig. 1, part of a branchlet with two whorls of leaves ; 2, a flower ; 3, corolla laid open, with stamens ; 4, ovary and style ; 5, transverse section of ovary ; 6, longitudinal section of ovary. *All enlarged.*

Tabula 2943.

VELLOSIELLA DRACOCEPHALOIDES, *Baillon*.

Scrophulariaceae. Tribus Gerardieae.

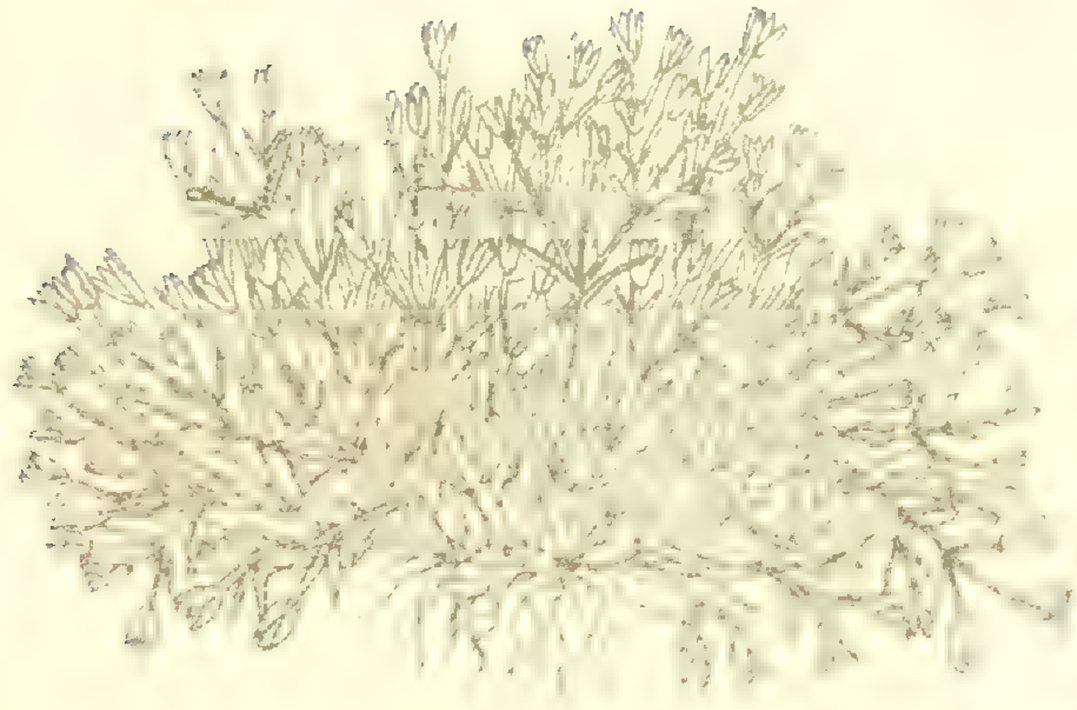
V. dracocephaloides, *Baill. in Bull. Soc. Linn. Paris*, vol. i. p. 714, and *Hist. des Pl.* vol. ix. p. 484. Species unica.

Caulis flexuosus vel subscandens, herbaceus, 2 mm. crassus, puberulus vel glaber, internodiis 3–6 cm. longis. *Folia* opposita, brevissime petiolata, 2–6 cm. longa, 1–2·5 cm. lata, lanceolata vel ovato-lanceolata, obtuse-acuta, basi subcordata vel rotundata, marginibus leviter sinuato-dentatis, utrinque scabra. *Pedunculi* 4–6 cm. longi, apice abrupte incurvati, bibracteati, puberuli. *Bracteae* 1–2 cm. longae, lineari-lanceolatae, scabrae. *Calyx* 4–4·5 cm. longus, 1·5–2 cm. diametro, ellipsoideo-inflatus, breviter subulato-acuminatus, basi gamosepalus, superne antice fissus, 9–10-nervosus, subscaberulus. *Corolla* exserta, 5·5–6 cm. longa, 4 cm. diametro, curvato-infundibuliformis, extra glabra, intus parce puberula, 'ex rubrolutea' (*Vellozo*), limbo obliquo subaequaliter 5-lobo, lobis brevissimis latis brevissime emarginatis erectis. *Stamina* breviora 3 cm. longa, longiora 4 cm. longa, filamentis basi crispato-tuberculatis glabris, antheris 7 mm. longis anguste ovato-sagittatis glabris loculis basi brevissime apiculatis. *Ovarium* ovoideum, in stylum 3·5 cm. longum attenuatum, glabrum; stigma bilobum, lobis suborbiculatis 3 mm. diametris. *Capsula* 2 cm. longa, 1·5–1·6 cm. lata, compresso-ovoidea, obtusa, loculicide dehiscens vel demum septo contrario bivalvis, valvis integris. *Semina* numerosissima, 3·5 mm. longa, linearia, apice truncata, testa laxa reticulata hyalina, nucleo minimo.—*Velloziella dracocephaloides*, K. Schum. in Fl. Bras. vol. viii. pt. ii. p. 404, et in Engl. & Prantl, Pflanzenfam. Nachtr. i. p. 299; Dusén in Ark. Bot., vol. viii. no. 7, p. 4. *Digitalis dracocephaloides*, Vellozo, Fl. Flum. vol. vi. t. 101 et p. 253. *Spathodia ilicifolia*, Seem. in Bonplandia, vol. vii. p. 246; Benth. et Hook. f. Gen. Pl. vol. ii. p. 1051, sub *Parmentiera*. *Tabebuia dracocephaloides*, Miers, et *T. dentata*, Miers in Proc. Roy. Hort. Soc. 1863, p. 199.

South America: British Guiana; *Schomburgk*, 1019; B: Brazil; Province of Sao Paulo, summit of the Paraty Alps, *Vellozo*; Province of Rio de Janeiro, Nova Friburgo, Morro do Conego, *Glaziou*, 12967, Serra do Itatiaia (Itatiaya), *Moreira*, 22, *Dusén*, and without precise locality, *Glaziou*, 8892, *Lobb*, 13.

As pointed out by Baillon, this remarkable plant certainly belongs to the order *Scrophulariaceae*. In the spathaceous calyx and form of the corolla it closely resembles the flowers of the genera *Spathodea* and *Parmentiera* in *Bignoniaceae*, but the simple scabrid leaves, form of capsule, placentation, form and structure of the seeds are at variance with the characters of *Bignoniaceae* and entirely agree with those of *Scrophulariaceae*, tribe *Gerardieae*, under which group, next to the genus *Melasma*, Berg., it should be placed. Its spathaceous calyx distinguishes it from all other genera in the order.—N. E. Brown.

Fig. 1, stamens, showing their attachment to the base of the corolla, with the remainder removed; 2, anther, back view; 3, ovary, with style and stigma; 4, transverse section of the ovary; 5, ripe capsule, open; 6, seeds. *All enlarged.*



Tabula 2944.

GOORINGIA LITTLEDALEI, *F. N. Williams.*

Caryophyllaceae. Tribus Alsineae.

Gooringia, *F. N. Williams in Bull. Herb. Boiss.* vol. v. 1897, p. 530 (descr. auct.) ; affinis *Arenariae* et *Buffoniae*, a priore floribus tetrameris. a posteriore capsulae valvis quatuor recedit.

Sepala 4, basi connata, 2 exteriora. *Petala* 4, minuta, integra vel rarius plus minusve bifida, persistentia. *Discus staminifer* perigynus, lobatus, lobis alternipetalis, iis sepalis interioribus oppositis bilobis, iis sepalis exterioribus oppositis saepius integris. *Stamina* 2, sepalis interioribus opposita, disco intra sinum lobulorum inserta. *Ovarium* 1–loculare ; styli 2, sepalis exterioribus oppositi, a basi distincti, longitudinaliter introrsum papillati ; ovula ∞ funiculis longis. *Capsula* oblongo-ovoidea, leviter compressa, fere ad basin in valvas 4 dehiscens. *Semina* a latere compressa, sat laevia, estrophiolata. *Embryo* perphericus ; cotyledones incumbentes.—Herba *habitu Saginae, verisimiliter annua, parva, instar dichasii ramosa, caulibus gracilibus.* Folia *linearia, basi in vaginam amplexicaulem connata.* Flores *terminales, solitarii, longe pedicellati.*

G. Littledalei, *F. N. Williams*, loc. cit. Species unica.

Herba 2–3·5 cm. alta, dense ramosa. glabra, purpurascens. radice fibrosa. *Rami* graciles. *Folia* linearia, acuta, 6–9 mm. longa, 0·7–1 mm. lata, subcarnosa, inferne in vaginam 0·7–0·8 mm. longam connata. *Pedicelli* floriferi 5–10 mm. longi, fructiferi usque ad 16 mm. longi. *Sepala* ima basi connata, in sicco suberecta, superne leviter recurva, naviculiformia, carinata, marginibus latis hyalinis inflexis, exteriora sub anthesi 2·75 mm. longa, interiora 2·5 mm. longa, exteriora sub fructu 3·5–4 mm. longa, interiora 3·2–3·5 mm. longa. *Petala* ligularia, spathulata vel oblanceolata, apice obtusa vel rotundata, nonnunquam plus minusve bifida, circiter 0·8 mm. longa. *Disci* lobi staminiferi 0·05 mm. longi. *Filamenta* subulata, circiter 1·2 mm. longa ; antherae suborbiculares, circiter 0·3 mm. diametro. *Ovarium* late ovato-ellipticum, 1·3–1·4 mm. longum, 0·8 mm. latum ; styli 0·5 mm. longi ; ovula 9–12. *Capsula* 2–3 mm. longa ; valvae truncatae, apice incrassatae. *Semina* ambitu late elliptica vel suborbicularia, usque ad 0·7 mm. longa, 0·6 mm. lata ;

testa minute irregulariter brunneo-lineolata.—*Arenaria Littledalei*, Hemsl. in Kew Bull. 1896, p. 209.

Central Tibet: Gooring Valley, 5000 m., *Littledale*. Sikkim: Naku Chu Valley, 4800 m., *Smith & Cave*.

The salient characteristic of *Gooringia* is the presence of only two stamens, which are opposite the inner sepals. A third stamen, opposite one of the outer sepals, was found in one flower, and a staminode, more or less reduced, sometimes occurs in the same position (see figs. 4–5). Reduction to such an extent in the androecium is rare in the *Alsineae*. *Buffonia tenuifolia*, L., however, is stated by Boissier (Fl. Or. vol. i. p. 665) to have three or more rarely two stamens; *Cerdia*, a Mexican genus of *Polycarpeae*, has only a single stamen; *Pollichia*, an African genus of *Paronychieae*, has one or two; *Dicheranthus*, of the tribe *Pterantheae*, has two or three; and *Scleranthus* may have one, two, five or ten.

The disk of *Gooringia* consists of four lobes, opposite the sepals; the lobes opposite the inner sepals are bilobed, and those opposite the outer sepals usually entire; when they bear a stamen or staminode, however, they are generally bilobed.

In the previous descriptions of *G. Littledalei* the flowers are stated to be apetalous. Petals were found, however, in all the flowers examined during the preparation of the present figure and description. They are usually entire, occasionally emarginate or bilobed.

Apart from the reduction in the number of stamens, *Gooringia* differs from *Arenaria* in the tetramerous flowers; from *Buffonia* in the four-valved capsule; and from *Mochringia* in the estrophiolate seeds. It stands in the same relation to *Buffonia* as *Arenaria* does to *Alsine*. In *Buffonia* and *Alsine* the capsule dehisces by as many valves as there are styles; whereas in *Gooringia* and *Arenaria* the valves or teeth of the capsule are twice as numerous as the styles.

Numerous crystals of calcium oxalate are visible in the leaf by transmitted light under a lens of low power.—T. A. Sprague.

Fig. 1, upper part of branch, bearing flowers; 2, flower; 3, expanded flower; 4, another, pistil removed; 5, another, calyx removed; 6, part of disk, bearing stamen and petal; 7, pistil; 8, longitudinal section through pistil; 9, placenta and ovules; 10, capsule; 11, seed. *All enlarged.*

HANCOCKIA UNIFLORA, *Rolfe.*

ORCHIDACEAE. Tribus, EPIDENDREAE.

H. uniflora, *Rolfe in Journ. Linn. Soc.* xxxvi. p. 20. Species unica.

Herba terrestris, nana, circiter 10 cm. alta. *Rhizoma* repens, gracile ; internodia 1·5–2·5 cm. longa. *Folia* alterna, petiolata, ovata, acuta vel subacuta, 3–5 cm. longa, 1·5–2 cm. lata, submembranacea, 11–13-nervia ; petioli 1–2 cm. longi. *Scapi* terminales, suberecti, 3–4 cm. longi, vaginis lanceolatis membranaceis imbricatis obtecti. *Flores* carnei (*Henry*). *Sepala* subconniventia, libera, lineari-lanceolata, acuminata, 1·5–2 cm. longa. *Petala* anguste lanceolata, apiculata, sepalis subaequalia. *Labellum* ad basin columnae breviter adnatum, erectum, late ellipticum, trilobum, membranaceum, 1·5 cm. longum, 8–9 mm. latum, basi longe calcaratum ; lobi laterales subobtusi ; lobus intermedius suborbicularis, obtusus ; discus obscure tricarinatus ; calcar graciliter calcaratum, circiter 1·5 cm. longum. *Columna* erecta, 1·2 cm. longa, alata, apoda, vertice in clinandrium angustum producta. *Anthera* operculata, apice subobtusa, loculis 2 bene distinctis ; pollinia 8, cerea, in quoque loculo 4, adnata. *Stigma* concavum.

CHINA : Yunnan ; Mengtze, mountain forests, at 1500 m. on the ground, *A. Henry*, 11112.

A very distinct and interesting orchid, allied to *Nephelaphyllum*, which it closely resembles in habit, but differing in its short, 1-flowered scapes, subconnivent sepals and petals, and long slender spur. It is dedicated to Mr. W. Hancock, F.L.S., who collected in the same district, and who sent to Kew several interesting collections of plants from China.—R. A. ROLFE.

Fig. 1, flower, with sepals and petals removed ; 2, lip ; 3, column ; 4, anther case ; 5, pollinia, seen from front and back. *All enlarged.*

Tabula 2946.

ACRYMIA AJUGIFLORA, *Prain.*

Labiatae. Tribus Ajugoideae.

A. ajugiflora, *Prain in Kew Bull.* 1908, p. 115 ; *Journ. As. Soc. Beng.* lxxiv. 2, p. 878. Species unica.

Caulis basi lignosus, ibique prostratus, radicans, 5–8 cm. longus, 5 mm. crassus, parce fulvo-tomentosus, apice internodiis brevibus vel brevissimis, dense foliosus. *Folia* opposita, petiolata, elliptica, apice obtusa vel subacuta, basi cuneata vel raro subtruncata, margine nisi basi integra crenata, supra viridia, subtus pallidiora, utrinque praesertim secus nervos 5–7-jugos et venas reticulatas fulvo-strigosa, lamina 12–20 cm. longa, 5–8·5 cm. lata ; petioli 2–5 cm. longi, dense fulvo-strigosi. *Flores* parvi, cymosi cymis axillaribus ; pedunculi strigosi, graciles, 4–5 cm. longi, dichotome ramosi ; pedicelli gracillimi, strigosi, 2–3 mm. longi, bracteolis subulatis longiores. *Calyx* campanulatus, 5-dentatus, 2·5 mm. longus, fructifer urceolato-globosus, 3·5 mm. longus, nervis strigosis. *Corolla* alba, 8 mm. longa, tubo sursum ampliato 4·5 mm. longo ; labium posticum 2-lobum, 2·5 mm. longum, lobis oblongis obtusis ; anticum 3-lobum, 5 mm. longum, patens, lobis lateralibus posticis similibus, intermedio obovato integro 4 mm. longo 3·5 mm. lato. *Stamina* 4 didynama, antica longiora, exserta ; filamenta ima basi hirsuta, ceterum glabra ; antherae 1-loculares. *Nuculae* obovoideae, 1 mm. longae, parce hirsutae, demum glabrescentes.

Malaya : Perak ; in chalky hills, 150–250 m., flowering in August, *Kunstler* 10709.

The genus *Acrymia* is nearly allied to *Cymaria*, Benth. with which it agrees as regards inflorescence and fruit but from which it differs in having a 2-lobed upper lip which does not conceal the 1-celled anthers. Though much smaller than is characteristic of that genus, the corolla of *Acrymia* resembles somewhat closely the corolla of *Ajuga*, a genus in which the anther cells, though usually discrete, are sometimes ultimately confluent. In *Acrymia*, however, the anther cells are confluent from a very early stage and the genus differs very markedly from both of its nearest allies in habit.—D. Prain.

Fig. 1, a flower ; 2, calyx, laid open, and pistil ; 3, corolla, laid open, and stamens ; 4, anther ; 5 and 6, nutlets. *All enlarged.*

TEONONGIA TONKINENSIS, *Stapf.*

Moraceae. Tribus Strebleae.

Teonongia, *Stapf.* Genus novum *Streblo*, Lour., affine, fructu dehiscente et cotyledonibus aequalibus semiglobosis distincta.

Flores monoici, ♂ capitato-glomerati, ♀ in pedunculo solitario basi utrinque floribus rudimentariis ♂ stipati. *Flos* ♂ sessilis : *Perianthium* 4- vel 5-partitum, segmentis latis imbricatis. *Stamina* 4 vel 5, filamentis in alabastro inflexis per anthesin porrectis exsertis. Ovarii rudimentum breviter columnare, apice dilatatum. *Flos* ♀ : *Perianthii* phylla 4, per paria disposita, ovarium arcte includentia, ea uniuscuiusque paris leviter vel vix imbricata, exteriora primo saltem inferne, interiora tota longitudine diu pilis intertextis contexta, quasi utriculum angustum apice minute vel obscure bidentatum referentia, omnia demum soluta et increscentia. *Ovarium* subrectum ; stylus paulo oblique insertus, alte 2-fidus, ramis stigmatosis elongatis subaequalibus ; ovulum sub apice pendulum. *Fructus* subglobosus, rectus, perianthii phyllis auctis obtectus, pericarpio carnosulo superne tenue et hic demum rupto semen exponente. *Semen* subglobosum, testa membranacea ; albumen 0. *Embryo* subglobosus ; cotyledones aequales, semiglobosae, plumulam minutam includentes, radicula recurva cotyledoni postico incumbente.—Arbor *inermis*. Folia *alterna, breviter petiolata, magis minusve dentata, rigidula, scabra, penninervia ; stipulae laterales, deciduae.* Glomeruli ♂ *subglobosi, parvi, breviter pedunculati vel subsessiles ; flores* ♀ *solitarii, breviter pedunculati.* Bracteae *sub flore* ♂ 3, *quarum* 2 *laterales, sub flore* ♀ *etiam* 3, *laterales cum flore bracteato rudimentario* ♂. **Fructus** ***piso minor.***

T. tonkinensis, *Stapf.* Species unica.

Arbor 12–20 m. alta, facie *Betulae*, ramosissima, cortice et ligno albidis ; ramuli scaberuli papillis albis rigidis. *Folia* polymorpha, obovato-oblonga vel oblanceolata vel lanceolata, abrupte caudato-acuminata, basi cuneata, dentata, plerumque dentibus 3 grossis in utroque latere, raro subintegra, 5–15 cm. longa, 2–3·5 cm. lata, nervis lateralibus utrinque 5–10, curvati, arcuatim connecti, venarum rete

laxo ; petiolus tenuis, scaber, papillis rigidis albis, 1·5–4 mm. longus. *Glomeruli* ♂ 6–9-flori, subsessiles vel pedunculo ad 4 mm. longo suffulti ; bractea bracteolaeque obtusae, florem aequantes, illa ovata elliptica, hae oblongae. ***Flos*** ♂ : ***Perianthium*** lobis ovatis, scaberulum, 1 mm. longum. ***Flos*** ♀ : ***Perianthium*** ovoideum, ovario primo arcte applicatum, scaberulum, phylla demum aucta, elliptica vel late oblonga, 6–7 mm. longa. *Styli* cum stigmatibus 3–3·5 (ex Dubard et Eberhardt ad 10) mm. longi. *Fructus* diametro 7–9 mm. *Streblus sp.*, Eberhardt in Bull. Éc. de l'Indoch. vol. x. pp. 798–802. *Bleekrodia tonkinensis*, Dubard & Eberhardt in Compt. Rend. Ac. Sc. Paris, vol. cxiv. p. 631, and in Bull. Éc. de l'Indoch. vol. x. pp. 868–870.

Tonkin : on more or less calcareous soil in most of the provinces along the Chinese Frontier, and in the provinces Ninh-Binh and Hoa-Binh, south of the Red River ; known in Tonkinese as 'Teo-nong.'

This plant was originally described as a *Bleekrodia* ; but quite recently (Bull. Éc. de l'Indochine, vol. xiii. p. 175) its authors suggested that it might be a distinct genus, mainly on account of the perianth not becoming fleshy in the fruiting stage, as stated by Blume for *Bleekrodia*. They suspected, however, an error in Blume's description owing to his having mistaken the pericarp for the perianth. There are no fruiting specimens of *Bleekrodia* at Kew, but Boerlage (Handleid. Fl. Nederland. Ind. vol. iii. part i. p. 312) in his description of the fruit is quite explicit on that point. He says : 'Fruit enclosed in the thin perianth, drupaceous ; outer layer (buitenlaag) of the fruitwall very thick below, 2-lobed, thin on the top ; inner layer (binnenlaag) papery.' This reads very like the description of the fruit of the plant in question, except as far as the perianth is concerned. According to Boerlage this in the flower is tubular, contracted above and provided with 4 short teeth, and nothing is said of its breaking up into 4 bractlike parts such as we find in the fruiting stage of the Teo-nong. It is in fact just this structure of the female flower which makes it impossible to refer the Teo-nong to *Bleekrodia*, the former approaching in that respect so closely to *Streblus* that it would have to be considered as a species of that genus, if it were not for the structure of the fruit with its peculiar dehiscence, and the seed, both characters which have so far been relied upon as fairly uniform within the genera of the *Strebleae* and *Fatoueae*. For this reason it seems therefore unavoidable in our present state of knowledge of those tribes to treat the Teo-nong tree as the representative of a new genus.—O. Stapf.

Fig. 1, part of a branch with a leaf and a young male inflorescence in its axil ; 2, diagram of male flower ; 3, male flower bud with bracts ; 4, young male flower, opened ; 5, the same flattened out, the filaments not yet lengthened out ; 6, stamens ; 7, branch with female inflorescence ; 8, diagram of female inflorescence, * marking the position of the rudimentary male flowers ; 9, female inflorescence ; 10, female flower, the median sepals spread out ; 11, pistil ; 12, longitudinal section through pistil ; 13, almost mature infructescence, the lateral sepals separated ; 14, seed, recurved radicle at upper end. *All enlarged except* 1 *and* 7, *which are of natural size.*

M.S del.et lith.

Tabula 2948.

TYLOSTEMON UGANDENSIS, *Stapf.*

Lauraceae. Tribus Perseeae.

T. ugandensis, *Stapf in Dyer, Fl. Trop. Afr.* vol. vi. sect. 1, p. 181 (anglice); species glandulis staminum ordinis III receptaculo latissime adnatis distinctissima.

Frutex vel *arbor* 6–16 m. alta, ramulis parce rufo-pubescentibus, deinde glabratis; gemmae fulvo-tomentellae. *Folia* oblonga, utrinque breviter acuta vel apice subobtusa, 10–16 cm. longa, 4·5–7·5 cm. lata, coriacea, supra lucidula, exsiccando fuscescenda, novella fusco-pubescentia, mox glabrata; costa infra prominens, supra plana vel inferne concava et latiuscula; nervi laterales utrinque 8-10, superiores arcuatim connecti uti venae laxe anastomosantes, utrinque prominuli; petiolus 8–10 mm. longus, supra leviter canaliculatus. *Paniculae* ex axillis foliorum summorum, 4–6 cm. longae, 5–7 cm. latae, densiusculae, pedunculis 1–2 cm. longis uti ramis ramulis pedicellis filiformibus 1·5–3 mm. longis fulvo-pubescentibus; bracteae cymbiformes, 1 cm. longae, fulvo-tomentosae, mox deciduae. *Perianthium* late cupulare, 3-merum, 3 mm. diametro, extus fulvo-pubescens; receptaculum quam segmenta latissime ovata intus pubescentia duplo altius. *Stamina* introrsa (ordinis I et II) filamentis brevissimis quam antherae brevioribus et angustioribus dense fulvo-tomentosis, antheris vix 1 mm. altis, 1·5 mm. latis, dorso fulvo-pubescentibus; extrorsa (ordinis III) introrsis similia, nisi filamentis paulo longioribus et antheris subrotundis, utrinque glandula suborbiculari fere 2 mm. diam. late receptaculo adnata stipata; staminodium ovatum, extra villosum. *Ovarium* glabrum vel pubescens, stylum aequans vel eo longius. *Fructus* oblongo-ellipsoideus, perianthio immutato emarcido insidens, 6 cm. longus, 1·7 cm. diametro.—*Beilschmiedia ugandensis*, Rendle in Journ. Linn. Soc. vol. xxxvii. p. 203.

Tropical Africa: Uganda; South Buddu, from the shores of Lake Victoria up to 1110 m. on sandy plains, *Dawe*, 247, 266, 964: lake shore north of the mouth of the Bakora River, *Bagshawe*, 142: Toro, Usogi River, *Dawe*, 544.

According to Mr. M. T. Dawe, this tree known as 'Mwosa' or 'Mwasa' yields a hard timber. Dr. Bagshawe described it as a shrub, growing in shady situations on the lake shore, and his specimen from which the original description in the Flora of Tropical Africa was drawn up also differs somewhat in having mostly blunter leaf bases, and the staminal glands are frequently so completely fused with the receptacle as to form an irregular lining to it; but taking into account the whole facies of the specimens and their origin from the same area it appears evident that those differences come within the range of ordinary variation.—O. Stapf.

Fig. 1, pair of flowers; 2, one half of a flower, flattened out; 3, perianth segment with stamen; 4, stamens of the third series, front and back views; 5, staminode; 6, ovary; 7, same in longitudinal section; 8, fruits. *All enlarged except* 8, *which is of natural size.*

M.S del et lith.

Tabula 2949.

LINTONIA NUTANS, *Stapf.*

Gramineae. Tribus Aveneae.

Lintonia, *Stapf.* Genus novum affine *Astreblae*, F. Muell., sed glumae quam spicula multo breviores, 1-nerves, valvae more *Danthoniae* bilobae, haud ultra aristae insertionem divisae.

Spiculae mediocres, lateraliter paulo compressae, brevissime pedicellatae, in racemos spiciformes dispositae; rhachilla demum supra glumas soluta, caeterum tenax. *Lethoecia* 4–5 hermaphrodita, fertilia, summa 1–2 reducta sterilia, glumas longe superantia. *Glumae* paulo inaequales, lanceolatae, hyalinae, 1-nerves. *Valvae* inter nervos interiores cartilagineae, caeterum membranaceae, 7–9 costato-nervosae, seriatim pilosae, 2-lobae, aristatae, arista ad sinum orta; lobi contigui, liberi, obtusi; callus anthoecii infimi brevis, obtusus, pilosulus. *Palea* 2-carinatae, ad aristae insertionem attingentes. *Lodiculae* 2, cuneatae, glabrae. *Stamina* 3. *Ovarium* stipitatum, oblongum, glabrum; styli breves, tenuissimi; stigmata gracilia, angusta, laxe plumosa, lateraliter exserta. *Caryopsis* oblonga, a dorso compressa vel semiteres; hilum obscurum; embryo magis minusve caryopsin mediam aequans, scutello subpanduriformi.—Gramen *perenne*. Folia *lamina angusta, ligula scariosa.* Racemi 1–3, *nutantes*.

L. nutans, *Stapf.* Species unica.

Gramen perenne, caespitosum, 5–6 dm. altum, praeter spiculas fere totum glabrum. *Culmi* graciles, inferne ancipites, superne teretes, circiter 6-nodi, internodiis sursum sensim accrescentibus, summo circiter 25 cm. longo longe exserto. *Foliorum* vaginae infimae valde compressae, carinatae, superiores teretes arctae et quam internodia breviores; ligulae truncatae, ad 1 mm. longae; laminae angustae, lineares, superne longe attenuatae, acutae, ad 2 cm. longae, 3–5 mm. latae, pallide virides, firmulae, nervis primariis circiter 7, secundariis interjectis 3–5 arctis, glabrae vel basin versus parce pilis conspersae, infra ad nervos et ad margines asperulae. *Racemi* plerumque 2, rarius 3 vel 1, angusti, spiciformes, 4–8 cm. longi, nutantes, breviter pedunculati, rhachi tenui angulata, internodiis 4–5 mm. longis; pedicelli

brevissimi, distincti. *Glumae* lanceolatae, uninerves, inferior acuta, 3–3·15 mm. longa, superior saepe obtusiuscula vel emarginata. *Valvae* a latere visae oblongae, explanatae ovales, inferiores ad aristae insertionem 4 mm., lobis obtusis inclusis ad 6 mm. longae, superiores breviores, summa sterilis globoso-inflata ; nervi conspicui, inferne costato-incrassati ; pilorum series 5, ad vel ultra mediam glumam productae ; aristae flexuoso-divaricatae, scabrae, inferiores ad 8 mm. longae, intermediae multo breviores, summae ad mucronem reductae. *Paleae* ad carinas ciliatae, in dorso minute pubescentes. *Antherae* 1·5–2 mm. longae. *Stigmata* atropurpurea ad 2 mm. longa. *Caryopsis* 2–2·5 mm. longa.

British East Africa : Nairobi, *Linton*, 193.

There can be little doubt as to the affinity of this genus with the Australian genus *Astrebla*. This will be at once clear if we imagine the lateral lobes of the floral glumes of *Astrebla* as becoming adnate to the hardened middle lobe up to the base of the awn and both glumes so reduced as, in certain species of *Astrebla*, is the case with the lower. The nervation of the floral glumes follows the same type as that of *Astrebla*, whilst the peculiar reduction of the upper florets, the structure of the awn and the toughness of the rhachilla are characters common to both genera. The species of *Astrebla*, which form the basis of the genus, were originally treated as belonging to *Danthonia* (Lindley, in Mitch. Journ. Trop. Austr. 365 and Three Exped. East Austr. ii. 26) and Bentham himself (in Flor. Austr. vii. 602) admitted that 'it is certainly nearly allied to *Danthonia*,' but the central lobe and the untwisted awn induced him to place it (Fl. Austr. l.c.) next to *Pappophorum* and the inflorescence to refer it later on to *Chlorideae* (Journ. Linn. Soc. xix. 106 ; also Gen. Plant. iii. 1170). As to the inflorescence, it may be pointed out that the secund, spiciform raceme characteristic of so many *Chlorideae* also occurs in *Danthonia disticha*, Nees, whilst the valves and the awns approach—the latter apart from its not being spirally twisted—much closer to those of *Danthonia* than of *Pappophorum* or *Enneapogon*. I may add that the upper florets of *Astrebla triticoides*, F. v. Muell., are cleistogamous. Their anthers are very small and entangled in the more or less curled up stigmas, not unlike those of certain cleistogamic Danthonias. The anthers of the lower florets, however, are normal.—O. Stapf.

Fig. 1, part of a raceme with the persistent glumes of two fallen spikelets ; 2, tip of upper glume ; 3, valve, flattened out ; 4, palea with ovary and filaments ; 5, young flower (one loticule only shown) ; 6, stigma ; 7, grain ; 8, cross-section of same ; 9, embryo ; 10, uppermost florets of a spikelet. *All enlarged except* 1, *which is of natural size.*

Tabula 2950.

Figs. 1-12.—**DIGNATHIA GRACILIS**, *Stapf.*

Fig. 13.—**DIGNATHIA HIRTELLA**, *Stapf.*

Gramineae. Tribus Zoysieae.

Dignathia, *Stapf.* Genus novum affine *Latipedi*, Kunth, sed pedunculi haud applanati et internodia inter spiculas elongata, spiculae fertiles omnes aequales, summa uniuscuiusque ramuli ad glumas 2 hiantes reducta, glumae haud muricatae.

Spiculae sessiles. 3 vel 2 in ramulis brevissimis tenacibus racemose secundum rhachin primariam strictam dispositae. summa semper sterilis, caeterae fertiles, et ad curvaturas internodiorum superpositorum appositae, uniflorae, rhachilla haud continuata. *Anthoecium* 1. hermaphroditum. glumis multo brevius. *Glumae* magis minusve dissimiles, oblique oppositae. inferior rhachi apposita, quam superior brevior, utraque dorso late cartilagineo-incrassata, hyalino-marginata. superior inter margines et dorsum linea viridi notata. *Valva* a latere visa oblique ovalis, in aristulam scabram capillarem producta, hyalino-membranacea, 3-nervis, nervis lateralibus marginibus approximatis. *Palea* glumam floralem aequans, lineari-oblonga, 2-nervis. *Lodiculae* 2, cuneato-obovatae, carnosulae. *Stamina* 3. *Styli* distincti. tenuissimi; **stigmata plumosa, terminaliter exserta.** *Caryopsis* arcte in spicula inclusa, oblique oblongo-ovoidea, superne attenuata, sectione transversa suborbiculari. *Embryo* ad medium vel ultra tertiam partem attingens.—Gramina *annua vel perennia* (?), *caespitosa*. Culmi *e basi ascendentes vel erecti*. Folia *vernatione convoluta, angusta, rigidula. ligula in cilia minuta soluta*. Ramuli *spiculigeri decidui*.

Species 2, Africae orientalis.

1. D. gracilis, *Stapf* (sp. nov.); ab altera specie (*D. pubescente*) differt spiculis praeter cilia glabris vel parce asperulis. 3–3·5 mm. longis. gluma superiore a latere visa semi-elliptica vel semi-obovata magis minusve abrupte in acumen subulatum contracta, pedunculo **gracili 1–2 mm. longo (rarius breviore).**

Gramen caespitosum, ut videtur annuum, ad 30 cm. altum; culmi cum innovationibus fasciculati, erecti vel geniculato-ascendentes,

inferne ramosi, ramis oblique erectis vel suberectis, graciles, glabri, multinodi, internodiis sursum accrescentibus, intermediis vaginas breviter superantibus. *Foliorum* vaginae teretes, arctae, nisi summae tumidae, minutissime scaberulae vel fere laeves, inferiores margines versus pilis longis tenuissimis patulis conspersae vel plurimae glabrae, tenuiter striato-nervosae; ligulae pili vix 0·5 mm. longi; laminae lineares, acutae, 3–8 cm. longae, 1·5–3 mm. latae, rigidulae, glabrae vel basi hinc inde pilis conspersae, pallide virides vel demum rubescentes, nervis primariis 5–6, secundariis interjectis circiter 3 arctis, omnibus saltem superne asperulis. *Racemi* compositi 4–6 cm. longi, e vagina summa longe vel breviter exserti vel nonnulli basi subinclusi; rhachis gracilis, undulata, angulosa, ad angulos scabrida, internodiis inaequalibus 1–3 mm. longis; ramuli spiculigeri demum patuli vel semper oblique erecti, parte nudo (pedunculo) 2–3 mm. longo filiformi superne paulo incrassato angulari ad angulos aspero-ciliato, internodiis superpositis similibus sed curvatis ad 1·5 mm. longis. *Spiculae* 3–3·5 mm. longae, praeter cilia glabrae vel parce scaberulae, virescentes vel demum fusco-stramineae. *Gluma* inferior curvato-lanceolata, breviter acute acuminata, circiter 2 mm. longa, praeter marginem exteriorem hyalinum incrassata, laevis vel parcissime scaberula, superne ad margines rigide ciliolata; superior quam inferior duplo longior, a latere visa semi-elliptica vel semi-obovata, superne saepe abrupte in acumen subulatum subcurvatum vel leviter flexuosum vel rectum aequilongum contracta, dorso late incrassata, rotundata, laevis vel parcissime scaberula et ad gibbum parce rigide ciliolata, utrinque anguste hyalino-marginata et in acumine ciliata. *Valva* 3 mm. longa, albida, glabra vel saepius in dorso tenuiter ciliolata, aristula vix 1 mm. longa. *Palea* glumam aequans. *Antherae* 1–1·2 mm. longae, purpureae. *Caryopsis* 1·5–1·75 mm. longa. *Spicula terminalis* sterilis; glumae subulatae, inferior quam superior paulo longior, 2·5 mm. longa, dorso applanata, superior triquetra, intus concava, utraque rigide ciliolata.

British East Africa: Tanaland, *Linton*, 203, Ribe, *Wakefield*, 24.

Wakefield's specimens are in a rather advanced state, with all the spikelets fallen off excepting two late and apparently poorly developed inflorescences, with very short deciduous branchlets and small spikelets.

2. **D. hirtella**, *Stapf* (sp. nov.); a *D. gracili* differt spiculis hirtellis, ad 7 mm. longis, gluma superiore e basi angusta sensim longe caudato-attenuata, pedunculo vix 1 mm. longo.

Gramen caespitosum, an perenne (?), circa 15 cm. altum; culmi cum innovationibus fasciculati, erecti vel geniculato-ascendentes, basi parce ramosi, graciles, glabri, circiter 5-nodi, internodiis inferioribus breviter exsertis, caeteris praeter summum demum interdum exsertum vaginis inclusis. *Foliorum* vaginae teretes, arctae nisi summae tumidae, infimae latiusculae, breves, persistentes, prominenter nervoso-striatae, caeteri tenuiter striatae, vix scaberulae, glabrae vel margines

versus hincinde pilis conspersae ; ligulae pili 1 mm. longi ; laminae lineares, apiculatae, apiculo saepe leviter curvato, 2·5–3·5 cm. longae, ad 3 mm. latae, rigidulae, glabrae vel hincinde pilis perpaucis conspersae, obscure virides, nervis ut in *D. gracili*. *Racemi* compositi 4–4·5 cm. longi, e vagina exserti vel basi subinclusi ; rhachis ut in *D. gracili*, nisi minus undulata ; ramuli spiculigeri oblique erecti vel rhachi adpressi, parte nudo (pedunculo) vix 1 mm. longo subtereto aspero pubescente, internodiis superpositis subapplanatis angularibus leviter curvatis, 1·-1·5 mm. longis. *Spiculae* fertiles circiter 7 mm. longae, hirtellae, pallide virescentes. *Gluma* inferior angusta, oblique curvato-lineari-lanceolata subulato-acuminata, 4 mm. longa, dorso applanata, indurata, ad margines rigide ciliata, caeterum hirtella ; superior e basi oblique lanceolata, longe et sensim caudato-acuminata, quam inferior multo longior, acumine flexuoso subulato, dorso incrassata, rotundata, hirtella et in dorso et ad margines rigide ciliata, inter margines angustissimas hyalinas et dorsum linea viridi notata. *Valva* 2·5 mm. longa, ut in *D. gracili* nisi paulo firmior et tenuissime puberula, aristula setiformi vix ad 1 mm. longa. *Antherae* ad 2 mm. longae, flavescentes. *Caryopsis* 2 mm. longa. *Spicula* terminalis sterilis ; glumae subulatae, 3 mm. longae, rigide ciliatae, inferior dorso applanata, superior triquetra, intus concava.

British East Africa : without precise locality, *Linton*, 4 (cum *Latipede senegalensi*, Kunth).

A very distinct genus of obvious affinity. The hardened glumes of the fertile spikelets suggest a pair of jaws or mandibles, hence the name *Dignathia*.—O. Stapf.

D. gracilis : fig. 1, junction of sheath and blade with ligule ; 2, cross-section through young leaf, showing the vernation ; 3, deciduous branchlet with two fertile and one barren spikelet ; 4, diagram of fertile spikelet and axis (I. and II. glumes, III. valve, *p* palea) ; 5, fertile spikelet, adaxial view ; 6, lower glume ; 7, upper glume and floret ; 8, floret ; 9, palea ; 10, flower ; 11, seed ; 12, sterile terminal spikelet.

D. hirtella : fig. 13, deciduous branchlet with two fertile and one barren spikelet. *All enlarged.*

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Tabula 2951.

IMPATIENS GAGEI, *Hook. f.*

BALSAMINACEAE.

I. Gagei, *Hook. f.* (*sp. nov.*) ; *I. decipienti*, Hook. f. proxima, differt foliis caudato-acuminatis serrulatis sepalisque dimidiatim ovatis.

Herba erecta, glaberrima, caule gracili simplici vel ramoso. *Folia* 6–10 cm. longa, alterna, petiolata, ovata vel ovato-lanceolata, caudatim acuminata, serrulata, membranacea, basi cuneata vel acuminata, nuda vel ciliata, in petiolum 2–4 cm. longum gracilem angustata, nervis utrinque 8–10 ; glandulae stipulares 0. *Pedicelli* in axillis foliorum 1–3, sessiles vel pedunculo brevissimo inserti, 2–3 cm. longi, capillares, basi bracteati ; bracteae setaceae vel filiformes. *Flores* inter majores, speciosi, violacei, exsiccati rosei ; raphides 0. *Sepala* 2, 6–7 mm. longa, dimidiato-ovata, aristato-acuminata, integerrima, eglandulosa. *Vexillum* amplum, orbiculare, 1·4–1·8 cm. diametro, costa dorso medio vel inferne gibba, apiculata. *Alae* substipitatae, amplae, 3 cm. longae ; lobus basalis rotundatus, distalis paullo longior, oblongo-obcordatus ; auricula dorsalis prominens. *Labellum* saccatum, 2–3 cm. longum, basi sensim vel abrupte in calcar breve incurvum attenuatum, ore ascendente apiculato. *Filamenta* brevia, linearia ; antherae sessiles. *Ovarium* lineare, rectum, apice acuto incurvo.

EASTERN HIMALAYA : Darjeeling ; Tonglo slopes, below Simana, alt. 6000–8000 ft., *Burkill* 27743, 27744, 27745.

The simply pedicellate large flowers refer *I. Gagei* to the neighbourhood of *I. decipiens* which differs in having crenate leaves and orbicular sepals. I have named it after Major A. T. Gage, Superintendent of the Royal Botanic Garden at Calcutta. Mr. Burkill says of this species: 'It does not ascend on the Tonglo ridge, but is found in the Col at the head of the Little Rungiet river. The flower is violet with a pink spur twisted to the left, and the lower (distal) lobes of the wings are slightly twisted to the same side.'—J. D. HOOKER.

Fig. 1, apex of peduncle, bracts, pedicels, flower and ovary; 2, sepals; 3, standard; 4, wing; 5, lip; 6, stamen. *All enlarged.*

TABULA 2952.

IMPATIENS CYATHIFLORA, *Hook. f.*

BALSAMINACEAE.

I. cyathiflora, *Hook. f.* (*sp. nov.*); herba alternifolia, foliis ovatis crenato-serratis utrinque 3–5-nerviis, pedunculis 6–10-floris, floribus flavis rubro-punctatis, sepalis subquadratis vel late ovatis, alis angustis.

Herba elata, 4–5 dm. alta, ramosissima, glaberrima vel ramulis ultimis setulosis, floribus mediocribus, caule sat robusto ramisque gracilibus foliosis. *Folia* 5–8 cm. longa, alterna, petiolata, membranacea, ovata vel summa ovato-lanceolata, acuminata, crenato-serrata setulis passim interjectis, subtus pallida, basi acuta vel in petiolum gracilem 1–2 cm. longum angustata, nervis utrinque 3–5; glandulae stipulares minutae vel 0. *Pedunculi* foliis breviores vel longiores, 6–10-flori; pedicelli 1–1·5 cm. longi; bracteae ovato-lanceolatae, 3–4 mm. longae, longe acuminatae, apice glanduligerae. *Flores* flavi, rubro-punctati. *Sepala* 2, oblique ovata vel subquadrata, obtusa vel subacuta, crassiuscula, multinervia. *Vexillum* orbiculare, cucullatum, 10 mm. latum, muticum, costa medio dorso paullo incrassata. *Alae* angustae, stipitatae, 2–2·5 cm. longae; lobus basalis oblongo-rotundatus; distalis duplo longior, loriformis, basi paullo dilatatus, apice obtusus. *Labelli* limbus 1·5–1·8 cm. longus, subsymmetrice poculiformis vel infundibularis, in calcar gracile incurvum limbo aequilongum vel longius attenuatus, ore circulari horizontali mutico. *Filamenta* gracilia; antherae didymae. *Ovarium* lineare, rectum, acuminatum. *Capsulae* clavatae, 2–2·7 cm. longae, acutae, polyspermae. *Semina* oblonga vel obovata, 3 mm. longa, tuberculata, fusca.

CHINA: Yunnan; on a mountain near Yunnan Sen, close to a temple, *Ducloux* 2910 in Herb. Mus. Paris.

Closely allied to *I. obconica,* Hook. f. MSS. and *I. loulanensis.*—J. D. HOOKER.

Fig. 1, margin of leaf; 2, bract; 3, sepal; 4, standard; 5, wing; 6, lip; 7, stamens; 8, ovary; 9, capsule; 10, seed. *All enlarged.*

TABULA 2953.

IMPATIENS LOULANENSIS, *Hook. f.*

BALSAMINACEAE.

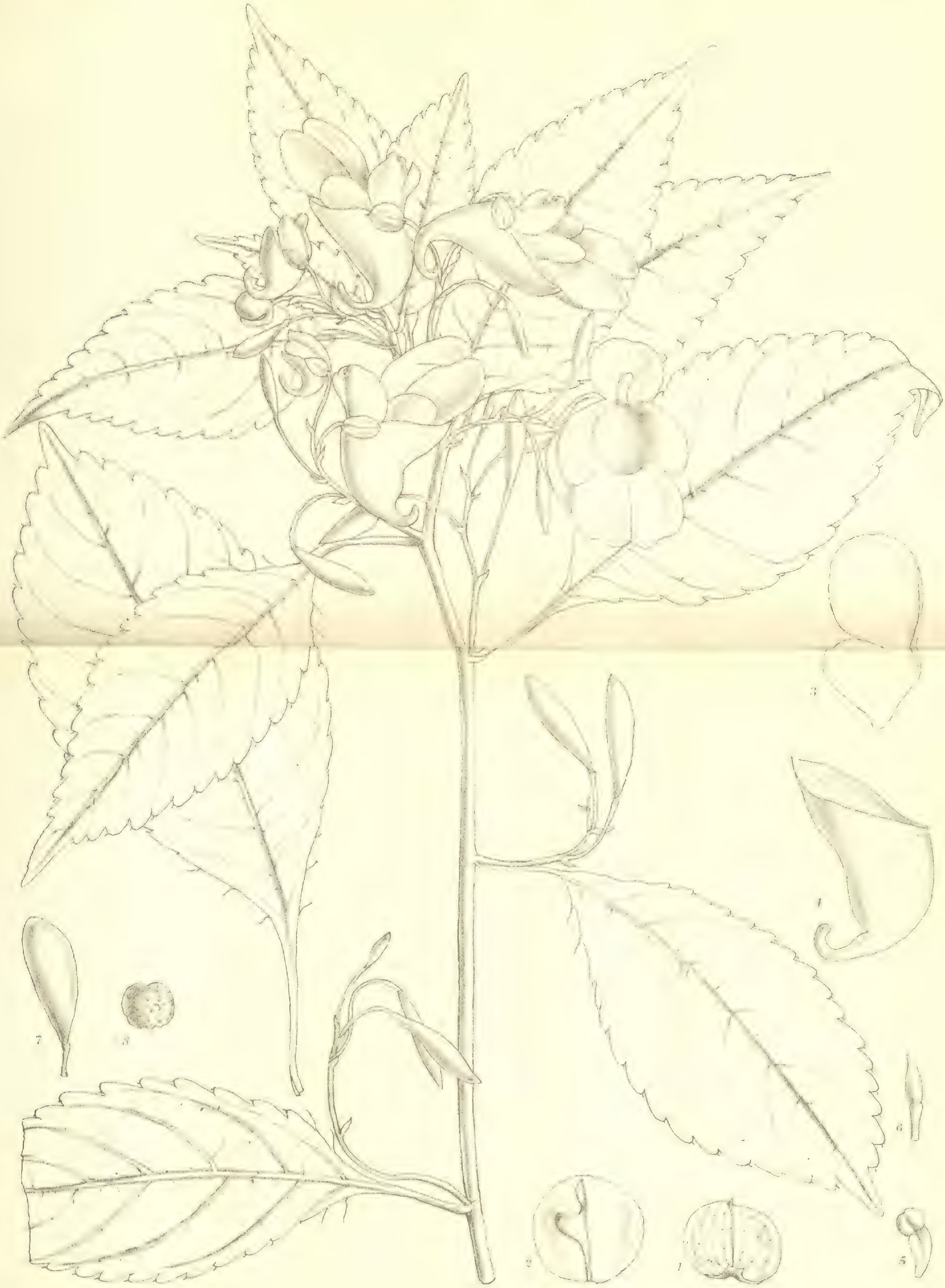
I. loulanensis, *Hook. f.* (*sp. nov.*) : herba alternifolia, foliis crenatis subtus glaucis utrinque 6-8-nerviis, pedunculis multifloris, sepalis longe aristato-acuminatis.

Herba erecta, ramosa, glaberrima, 5–6 dm. alta, floribus majusculis, caule sat robusto ramisque foliosis. *Folia* 5–10 cm. longa, alterna, petiolata, membranacea, ovata vel ovato-rotundata, acuta vel acuminata, crenata vel crenulata, setulis interjectis raris, subtus glauca, basi repente in petiolum gracilem 3–5 cm. longum angustata, nervis utrinque 6-8. *Pedunculi* foliis longiores, graciles, erecti, saepe apices versus ramulorum corymbosim dispositi, multiflori ; pedicelli filiformes, 1–1·5 cm. longi ; bracteae ovatae, 4–5 mm. longae, in aristam glanduligeram limbum aequantem productae. *Flores* ad 2 cm. expansi ; raphides 0. *Sepala* 2, late oblique cordato-ovata, in aristam elongatam acuminata, nervis reticulatis. *Vexillum* rotundatum, 9 mm. diametro, costa dorso crasse carinata, mucronata. *Alae* 1·5–2 cm. longae, basi cuneatae ; lobus basalis rotundatus ; distalis paullo longior, angustus, a basi paullo dilatata sensim angustatus, obtusus ; auricula dorsalis inconspicua. *Labelli* infundibularis limbus symmetricus, ad 2 cm. longus, in calcar gracile ascendens limbo longius vel brevius sensim attenuatus, ore horizontali acuminato. *Filamenta* brevia ; antherae didymae, superpositae. *Ovarium* fusiforme, rectum, acuminatum.

CHINA : Yunnan ; prope Loulan, *Ducloux* 4436 in Herb. Mus. Paris.

Closely allied to *I. oliveriana*, Hook. f. MSS., but differing in the small unilaterally 6–8-nerved leaves, long-aristate gland-tipped bracts, awned sepals and mucronate keel of the wings. More nearly allied to *I. cyathiflora* (tab. 2952) in which there are only 3-5 nerves on each side of the leaf, the sepals are obtuse and the vexillum muticous. All three agree in the form of the infundibular symmetrical lip with a circular horizontal mouth.—J. D. HOOKER.

Fig. 1, pedicel, bract and ovary ; 2, bract ; 3, sepal ; 4, standard ; 5, wing ; 6, lip ; 7, stamens. *All enlarged.*



M.S.del et lith

J.D.Hooker anal

TABULA 2954.

IMPATIENS RUBRO-STRIATA, *Hook. f.*

BALSAMINACEAE.

I. rubro-striata, *Hook. f.* (*sp. nov.*); herba alternifolia, foliis novellis pubescentibus crenatis utrinque 5-nerviis, pedunculis 3–5-floris, bracteis inferioribus saepe vacuis, sepalis 2 rotundatis.

Herba elata, glaberrima vel ramulis ultimis foliisque novellis puberulis, floribus inter majoribus, caule sat robusto ramoso folioso. *Folia* 0·5–1 dm. longa, alterna, petiolata, firma, ovata, ovato-rotundata vel elliptica, acuta, crenata setulis apicalibus, rarius crenato-serrata, basi nuda vel raro glandulis paucis marginata, in petiolum 2–4 cm. longum sensim angustata, costa subtus prominente, nervis utrinque 5. *Pedunculi* foliis multo breviores, 2–3 cm. longi, patentes, racemosim 3–5-flori, saepe infra inflorescentiam bracteis 1–2 vacuis instructa. *Pedicelli* 1–1·5 cm. longi, fructiferi elongati; bracteae minutae, late ovatae, obtusae, 1–2 mm. longae, concavae, persistentes. *Flores* ad 4–5 cm. expansi, rubro-striati, raphidibus instructi. *Sepala* 2, orbicularia vel oblata, 6–7 mm. lata, reticulatim nervosa, mutica, costa infra marginem puncto terminata. *Vexillum* orbiculare, 10–14 mm. latum, muticum, costa dorso crasse carinata, carina medio nasuta. *Alae* amplae, 2–3 cm. longae, sessiles; lobus basalis rotundatus, 1–1·5 mm. diametro; distalis major, obovato-rotundatus; auricula dorsalis reniformis, inflexa. *Labelli* limbus late saccatus, basi in calcar incurvum obtusum robustum ad 10 mm. longum repente attenuatus, ore elongato 1·5–2 cm. longo ascendente obtuso apiculato. *Filamenta* brevia, antherae didymae obtusae. *Ovarium* fusiforme, rectum, acuminatum. *Capsulae* clavatae, 1·5–2 cm. longae, apice rotundatae et mucronatae, polyspermae. *Semina* orbicularia, laevia.

CHINA: Yunnan; forests of Tchoung-chan, *Ducloux* 2612, 2613, 3606 in Herb. Mus. Paris.

A handsome species of robust habit, with 5-nerved crenate leaves, short few-flowered peduncles with very small persistent bracts, the lower of which are often flowerless as in *I. Duclouxii*, oblate sepals and rather large flowers streaked with red.—J. D. HOOKER.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary; 7, capsule; 8, seed. *All enlarged.*

J.D.Hooker ad nat.

Tabula 2955.

IMPATIENS SCUTISEPALA, *Hook. f.*

Balsaminaceae.

I. scutisepala, *Hook. f.* (*sp. nov.*); herba alternifolia, foliis ovatis crenatis utrinque 8–10-nerviis, pedunculis 5–8-floris, sepalis orbicularibus coriaceis exsiccatis duris.

Herba elata, robusta, ramosa, glaberrima, floribus mediocribus ramis exsiccatis sulcatis. *Folia* 1–1·5 dm. longa, alterna, suprema sessilia, inferiora longe petiolata, firma, ovata vel ovato-lanceolata, acuminata, crenata setis 0 interjectis, basi in petiolum 2–6 cm. longum angustata, costa subtus prominula, nervis utrinque 8–10. *Pedunculi* foliis longiores, erecti, firmi, racemosim 5–8-flori; pedicelli 1–2 cm. longi; bracteae late ovatae, acutae, 3–4 mm. longae, caducae. *Flores* 2–2·5 cm. expansi, roseo-punctati; raphides 0. *Sepala* 2, oblique orbicularia, 7 mm. diametro, mutica, exsiccata dure coriacea, nervis immeris striata, costa 0. *Vexillum* parvum, profunde cucullatum, muticum, dorso rotundatum. *Alae* 2·5 cm. longae, basi late cuneatae, sessiles; lobus basalis rotundatus; distalis subduplo longior, dolabriformis, apice rotundatus; auricula dorsalis angusta. *Labellum* saccatum, 2–2·5 cm. longum, basi in calcar breve inflexum repente attenuatum, ore fere horizontali obtuso. *Filamenta* brevia, linearia; antherae didymae, obtusae. *Ovarium* fusiforme, rectum, acuminatum. *Capsulae* lineares, 2–2·5 cm. longae, vix stipitatae, acuminatae, polyspermae. *Semina* obovoideo-oblonga, compressa, 1 mm. longa, subtuberculata, castanea.

China: Yunnan; Sanchan, *Ducloux* 4023 in Herb. Mus. Paris.

The sepals of this species are like those of the Nepalese *I. insignis*, DC., being, in a dried state or moistened, of a thick hard consistence, obliquely orbicular, concave, striate, without apex or midrib. The flowers are spotted (with rose-purple ?) on the vexillum and basal lobe of the lip.—J. D. Hooker.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary; 7, capsule; 8, seed. *All enlarged.*

Tabula 2956.

IMPATIENS GRACILIPES, *Hook. f.*

BALSAMINACEAE.

I. gracilipes, *Hook. f.* (*sp. nov.*); herba robusta, parviflora, foliis ovatis leviter crenatis utrinque 5–6-nerviis, pedunculis gracilibus 3–6-floris, floribus flavis, sepalis inaequilateralibus.

Herba annua, erecta, 2–3 dm. alta, ramosa, parviflora, caule succulento sat robusto, radice fibrosa. *Folia* 4–6 cm. longa, alterna, petiolata, firma, ovata, acuta vel acuminata, leviter crenata setulis passim interjectis, basi minute biglandulosa, in petiolum 1–2 cm. longum angustata, nervis utrinque 5–6 obscuris. *Pedunculi* graciles, foliis longiores, racemosim 3–6-flori; pedicelli 1–1·5 cm. longi; bracteae 2 mm. longae, ovato-lanceolatae, deciduae. *Flores* ad 1 cm. expansi, flavi; raphides 0. *Sepala* 3–4 mm. longa, anguste ovata vel oblonga, subacuta, inaequilatera, rarius dimidiato-ovata, costa crassa marginali, ceterum enervia. *Vexillum* orbiculare, cucullatum, muticum, dorso rotundatum. *Alae* sessiles, 10 mm. longae; lobus basalis rotundatus; distalis duplo longior, oblongo-dolabriformis, apice rotundatus; auricula dorsalis angusta. *Labelli* limbus brevis, cymbiformis, 6–7 mm. longus, in calcar incurvum duplo longius attenuatus, ore horizontali acuto. *Filamenta* linearia; antherae didymae. *Ovarium* fusiforme, rectum, acuminatum. *Capsulae* 1·5 cm. longae, lineares vel subclavatae, vix stipitatae, acutae, teretes, compressae, oligospermae. *Semina* obovata, compressa, 3 mm. longa, laevia, castanea.

EASTERN TIBET: Batang; at Yargong in moist shady places, *Abbé Soulié* 3113 in Herb. Mus. Paris.

Closely allied to *I. crassicaudex* and from the same country, differing in the obscurely crenate subcaudately acuminate leaves with often two small glands at the base, shorter petioles, longer pedunceles, and very inequilateral sepals.—J. D. HOOKER.

Fig. 1, bract; 2 and 3, sepals; 4, standard; 5, wing; 6, lip; 7, stamens; 8, ovary; 9, capsule; 10, seed. *All enlarged.*

TABULA 2957.

IMPATIENS CRASSICAUDEX, *Hook. f.*

BALSAMINACEAE.

I. crassicaudex, *Hook. f.* (*sp. nov.*); herba parviflora, caule crasso succulento, foliis ovatis caudatim acuminatis, floribus flavis, sepalis anguste ovatis.

Herba annua, glaberrima, foliosa, parviflora, 2–3 dm. alta, caule basi simplici crasso succulento dein ramosissimo, radice fibrosa. *Folia* 3–5 cm. longa, alterna, petiolata, flaccida, ovata, caudatim acuminata, crenato-serrata setulis passim interjectis, basi in petiolum 1–3 cm. longum angustata, nervis utrinque 4–5 obscuris. *Pedunculi* plurimi, filiformes, foliis breviores vel longiores, erecti vel patuli, racemosim pauci- vel multiflori; pedicelli 6–8 mm. longi; bracteae ovatae, acuminatae, 3–4 mm. longae, subpersistentes. *Flores* ad 1·5 cm. expansi, flavi; raphides 0. *Sepala* 2, angusta, deltoideo-ovata, 3 mm. longa, uninervia. *Vexillum* orbiculare, basi intrusum, muticum, 8 mm. latum, costa dorso crasse carinata. *Alae* sessiles, 15 mm. longae; lobus basalis rotundatus; distalis duplo longior, dolabriformis, apicem versus breviter angustatus; auricula dorsalis rotundata. *Labelli* limbus brevis, cymbiformis, 7 mm. longus, in calcar 2–2·5 cm. longum fere rectum attenuatus, ore horizontali obtuso apiculato. *Filamenta* gracilia; antherae obtusae. *Ovarium* fusiforme, rectum, acutum.

EASTERN TIBET: Batang; at Yargong, *Abbé Soulié* in Herb. Mus. Paris.

The succulent stem was, when fresh, probably as thick as the middle finger, and with the densely matted fibrous root suggests the probability of *I. crassicaudex* being a marsh or ditch plant.—J. D. HOOKER.

Fig. 1, bract; 2, sepal; 3, standard; 4 and 5, wings; 6, lip; 7, stamen; 8, ovary. *All enlarged.*

TABULA 2958.

IMPATIENS MEYANA, *Hook. f.*

BALSAMINACEAE.

I. Meyana, *Hook. f.* (*sp. nov.*) : herba gracilis, parviflora, foliis ovatis crenato-serratis utrinque 6–8-nerviis, pedunculis 2-floris gracillimis crassiusculis, sepalis ovatis, labelli calcare limbo duplo longiore, antheris acutis.

Herba gracilis, 2–3 dm. alta, glaberrima, parviflora, caule gracili ramoso. *Folia* 3-7 cm. longa, alterna, longe petiolata, membranacea, ovata vel ovato-lanceolata, subcaudatim acuminata, crenato-dentata vel serrata, subtus subglauca, basi longe in petiolum gracilem 2-3 cm. longum angustata, nervis utrinque 6-8. *Pedunculi* foliis longiores, gracillimi, erecti, 2-flori; pedicelli capillares, 1–1·5 cm. longi, fructiferi, paullo elongati, inferiores basi, superiores ultra medium bracteati; bracteae ovato-lanceolatae, longe acuminatae, 3–5 mm. longae, caducae. *Flores* ad 1 cm. expansi, perigonio crassiusculo; raphides 0. *Sepala* 2, ovata, acuminata, 5–6 mm. longa, 6–7-nervia, costa gracili. *Vexillum* quadrato-rotundatum utrinque bilobum, costa dorso carinata, carina sub apice rostellata. *Alae* basi late cuneatae, sessiles, 10 mm. longae; lobus basalis rotundatus; distalis paullo longior, oblongo-dolabriformis, apice rotundatus; auricula dorsalis rotundata. *Labelli* limbus cymbiformis, 8 mm. longus, ore horizontali acuto; calcar limbo duplo longius, a basi involutum. *Filamenta* late linearia; antherae late ovatae, acutae. *Ovarium* fusiforme, erectum, obtusum. *Capsulae* 2-3 cm. longae, lineares, teretes, acutae, polyspermae. *Semina* orbicularia, compressa, 3 mm. diametro, laevia, fusca.—J. D. HOOKER.

CHINA : Yunnan ; between Kokong and Tohen-kiong, *Père Mey* 1027, ex *Ducloux* in Herb. Mus. Paris.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary; 7, capsule; 8, seeds. *All enlarged.*

TABULA 2959.

IMPATIENS PRAINII, *Hook. f.*

BALSAMINACEAE.

I. Prainii, *Hook. f.* (*sp. nov.*) ; parvula, rigida, foliis sessilibus lanceolatis coriaceis crenato-serratis, pedunculis 1–4-floris, sepalis oblique ovatis aristatim acuminatis basi cordatis, labelli calcar limbo subaequilongum rectum.

Herba parvula, glaberrima, 1–2 dm. alta, caule gracili rigido ramoso infra folia cicatricato. *Folia* 2–5 cm. longa, alterna, apices versus ramorum conferta, sessilia, lanceolata, acuminata, crenato-serrata, coriacea, basi acuta, marginibus nudis vel subciliatis, nervis utrinque 5–6 ; glandulae stipulares ? *Pedunculi* foliis breviores, filiformes, furcati, 1–4-flori ; pedicelli 1–2 cm. longi, capillares ; bracteae ovatae vel lanceolatae, acuminatae vel aristatae, 1·5 mm. longae, membranaceae, apice glanduliferae. *Flores* angusti, 3–4 cm. longi, roseo-purpurei ? ; raphides 0. *Sepala* 2, oblique ovata, acuminato-aristata, saepe inaequilatera, basi cordata, uno latere in lobulum producta, marginibus eglandulosis. *Vexillum* late ovato-rotundatum, 10 mm. diametro, apiculatum, costa dorso medio paullo incrassata. *Alae* 2–5 cm. longae, angustae, sessiles ; lobus basalis late oblongus ; distalis triplo longior, loratus, basin versus dilatatus ; auricula dorsalis parva. *Labellum* cum calcare 2–2·5 cm. longum, cymbiforme, in calcar limbo aequilongum rectum obtusum productum, ore ascendente cuspidato. *Filamenta* anguste linearia ; antherae didymae, loculis muticis. *Ovarium* lineare, lente curvum, acuminatum. *Capsulae* 2·2·5 cm. longae, lineari-clavatae ; cuspidatae, polyspermae. *Semina* minima, vix 2 mm. longa, pyriformia, laevia, castanea.

EASTERN HIMALAYA : Sikkim ; Lachung Valley, near Choongtang, *Prain's Collectors*, 377 in Herb. Calcutta.

A small species with rigid stem and sessile lanceolate leaves recalling in form, crenation and texture *I. insignis*, but with a very different inflorescence and flower from that plant.—J. D. HOOKER.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen ; 6, ovary; 7, seed. *All enlarged.*

TABULA 2960.

IMPATIENS KINGII, *Hook. f.*

BALSAMINACEAE.

I. Kingii, *Hook. f.* (*sp. nov.*); herba robusta, caule subsimplici, paucifoliata: foliis late ovatis basi rotundatis grosse crenatis, pedunculis paucifloris, floribus amplis, sepalis 4, labello saccato, calcare brevi.

Herba annua, robusta, 4–6 dm. alta, fere glaberrima, caule erecto subsimplici, inferne longe nudo, crassitie paene digiti minoris. *Folia* pauca, remota, 5–10 cm. longa et lata, alterna, petiolata, utrinque glaberrima vel subtus secus costam nervosque puberula, late ovata vel rotundata, acuta vel acuminata, grosse crenata setulis aliquando interjectis, pergamentacea, basi rotundata vel cuneata, in petiolum 1–3 cm. longum repente angustata, nervis utrinque 5–6; glandulae stipulares rarae, digitiformes. *Pedunculi* axillis superioribus plurimi, 4–8 cm. longi, stricti, erecti; racemi pauciflori; pedicelli 1–2 cm. longi, filiformes; bracteae minutae, ovatae, acutae. *Flores* ampli; raphides 0. *Sepala* 4, 2 inferiora, 6–7 mm. longa, late ovata, acuminata, basi subcordata, gibba, crassiuscula; 2 superiora ter minora, ovato-lanceolata, acuminata, membranacea. *Vexillum* majusculum, orbiculare, concavum, costa dorso carinata, apiculata. *Alae* sessiles, 3–5 cm. longae: lobus basalis orbicularis, basi cuneatus, distalis duplo longior, infra medium dolabriformis, dein angustatus, apice gracili obtuso: auricula dorsalis majuscula, elongata, inflexa. *Labellum* late saccatum, basi rotundatum calcare brevi incurvo instructum, ore dilatato ascendente apice late rotundato apiculato. *Filamenta* 5 mm. longa, anguste linearia; antherae mediocres. *Ovarium* falcatum, acuminatum.

EASTERN HIMALAYA: interior of Sikkim; Jongri, at the head of the Rungiet towards the base of Kanchinjanga, near Patangla, Tinchoo and Bloktan. *King's Collector* 1471 in Herb. Calcutta.

The flowers of this very handsome species have been so badly preserved that my many attempts to obtain satisfactory analyses of them have failed. The district of Jongri, or Western Sikkim, is the upper catchment area of the Rungiet River.—J. D. HOOKER.

Fig. 1, outer sepals; 2, inner sepal; 3, standard; 4, wing; 5, lip; 6, stamens; 7, ovary. *All enlarged.*

Tabula 2961.

IMPATIENS NEPALENSIS, *Hook. f.*

Balsaminaceae.

I. nepalensis, *Hook. f.* (*sp. nov.*); elata, ramosa, parviflora, foliis ovatis acuminatis serrulatis basi cuneatis utrinque 8–10-nerviis, pedunculis multifloris, sepalis minutis late ovatis obtusis, capsulis erectis.

Herba annua, glaberrima, elata, erecta, caule ramoso. ***Folia*** 8–12 cm. longa, alterna, inferiora petiolata, superiora sessilia et subverticillata, ovata subcaudatim acuminata, serrulata, basi cuneata, in petiolum 1–3 cm. longum angustata, nervis utrinque 8–10; glandulae petiolares pulvinatae. *Pedunculi* in axillis supremis corymbosim dispositi, 4–8 cm. longi, striati; racemi multiflori; pedicelli breves, inferiores saepe umbellatim conferti, fructu elongati; bracteae ovatae, 3 mm. longae, inferiores verticillatae. *Flores* inter minores, ad 15 mm. longi. *Sepala* 2, 4 mm. longa, late ovata, subacuta, basi cordata, herbacea. *Vexillum* orbiculare, cucullatum, costa dorso late incrassata, apiculata. *Alae* ad 20 mm. longae, sessiles; lobus basalis rotundatus, basi cuneatus; distalis anguste dolabriformis, supra medium angustatus, apice rotundatus; auricula dorsalis rotundata. *Labellum* saccatum, subcylindraceum, ad 12 mm. longum, basi calcare limbo dimidio breviore inflexo instructum; ore fere horizontali cuspidato. *Filamenta* angusta, linearia; antherae majusculae. *Ovarium* rectum, acuminatum. ***Capsulae*** 2–5 cm. longae. ***Semina*** tuberculata, glabra.

Central Nepal: *Wallich* in Herb. Linn. Soc.

A single specimen of this species was found by me in a bundle of remainders after the distribution of the Wallichian Herbarium, in the rooms of the Linnean Society, bearing the label of *I. longicornu*, Wall. n. 4729, in Wallich's handwriting. In the body of the Wallichian Herbaria 4792* consists of *I. bicornuta*, *I. bicolor* and *I. sulcata*, all on the same sheet under the name of *I. longicornu*, Wall. Nepal, 1821.

* See Journ. Linn. Soc. Bot. xxxvii. (1904) 24.

I. nepalensis is most closely allied to *I. bicolor*, but is a much taller and stricter plant, with serrulate leaves and much smaller flowers, and it I mistake not (I have seen but one perfect specimen) tubercled seeds. The specimen I have placed in the type Wallichian collection; an excellent drawing of it is in the Kew Herbarium, from which the accompanying figure was taken.—J. D. Hooker.

Fig. 1, flower; 2, sepal; 3, wing. ***All enlarged.***

TABULA 2962.

IMPATIENS CIRRHIPETALA, *Hook. f.*

BALSAMINACEAE.

I. cirrhipetala, *Hook. f.* (*sp. nov.*); elata, ramosa, parviflora, foliis ovato-lanceolatis caudatim acuminatis crenatis utrinque 6–7-nerviis, pedunculis gracillimis 6–8-floris, sepalis basi incurvis, alarum lobo distali lineari spiraliter torto.

Herba elata, erecta, ramosa, glaberrima, parviflora, caule sat robusto, ramis gracilibus. *Folia* 0·5–1·5 dm. longa, alterna, petiolata, membranacea, ovato- vel oblongo-lanceolata, caudatim acuminata, crenata, setulis passim interjectis, basi in petiolum 1–3 cm. longum angustata, nervis utrinque 6–7. *Pedunculi* axillares, gracillimi, erecti, 5–7 cm. longi, apices versus racemosim 6–8-flori; pedicelli capillares, 1–1·5 cm. longi; bracteae minutae, lineari-lanceolatae, ad 2 mm. longae. *Flores* (alarum lobi distales exclusi) ad 1 cm. expansi, flavi?; raphides 0. *Sepala* 2, linearia, oblonga, acuminata, 6–7 mm. longa, 3-nervia, basin versus geniculatim incurva, geniculo tumido ultra pedicelli insertionem producto. *Vexillum* orbiculare, 8 mm. latum, costa tenuiter carinata, apice mucronata. *Alae* basi cuneatae, 18 mm. longae; lobus basalis rotundatus, 5–6 mm. diametro, distalis 8–10 mm. longus, anguste loriformis, creberrime tortus; auricula dorsalis reniformis, inflexa. *Labelli* limbus brevis, infundibularis, in calcar 1–7 cm. longum infra medium incurvum apice acutum vel bidentatum sensim attenuatus, ore lato ascendente apice rotundato apiculato. *Filamenta* brevissima, subulata; *antherae* parvae, obtusae. *Ovarium* tenue, acuminatum. *Capsula* immatura gracilis, acuminata.

EASTERN HIMALAYA: *Griffith* 1239 in Herb. Hort. Petrop.

This species presents two remarkable characters, the sepals are geniculate at the incurved base and the knee itself is deeply pouched, the pouch extending backwards beyond the insertion of the pedicel: and the slender exserted distal lobes of the wings are closely twisted.—J. D. HOOKER.

Fig. 1, flower with lip removed; 2, sepals; 3, standard; 4, wing; 5, lip; 6, spur; 7, stamens; 8, ovary. *All enlarged.*

TABULA 2963.

IMPATIENS PODOCARPA, *Hook. f.*

BALSAMINACEAE.

I. podocarpa, *Hook. f.* (*sp. nov.*); elata, ramosa, parviflora, foliis ovatis lanceolatisve caudatim acuminatis crenatis, pedunculis 6–8-floris, sepalis minutis deltoideis, capsulis clavatis longe gracile stipitatis.

Herba elata, ramosa, glaberrima, parviflora, ramis gracilibus. *Folia* 1–2 dm. longa, alterna, petiolata vel superiora sessilia, membranacea, ovata vel ovato-lanceolata, caudatim acuminata, crenata setulis interdum interjectis, basi in petiolum 2–4 cm. longum angustata, nervis utrinque 10–12; glandulae stipulares 0. *Pedunculi* 6–8 cm. longi, graciles, erecti; racemi 6–8-flori; bracteae minutae, 2 mm. longae, ovatae, acutae, persistentes. *Alabastra* globosa, ad 7 mm. diametro, calcare 10 mm. longo instructa, flava; raphides 0. *Sepala* 2, deltoideo-ovata vel rotundata, obtusa, 2 mm. longa, uninervia, membranacea, eglandulosa. *Capsulae* 2–2·2 cm. longae, erectae, clavatae, acutae, in stipitem gracilem vacuum elongatum angustatae, 2–3-spermae. *Semina* late oblonga, 3–5 mm. longa, tuberculata, atra.

WESTERN HIMALAYA: Garwhal; in woods above Kinali, alt. 7000–8000 ft., *Duthie* 3897 in Herb. Hort. Petrop.

I have seen but one specimen of this very handsome species, consisting of a branch about 20 inches long with leaves 4–8 inches long and erect peduncles with racemes, some bearing minute flower buds, others a few ripe capsules. In general habit, globose flower-buds and persistent bracts it approaches nearest to *I. racemosa*, differing greatly in stature, absence of infrapetiolar glands, broad obtuse eglandular sepals, capsules narrowed for more than half their length into a very slender, seedless stipes and large, tubercled seeds.—J. D. HOOKER.

Fig. 1, sepals; 2, stamens; 3, ovary; 4, capsule; 5, seed. ***All enlarged.***

M. S del. et lith.

J. D. Hooker ad nat.

Tabula 2964.

IMPATIENS HUMILIS, *Hook. f.*

Balsaminaceae.

I. humilis, *Hook. f.* (*sp. nov.*); pubescens, foliis ovatis caudatim acuminatis obscure crenulatis, pedunculis unifloris decurvis, sepalis rotundatis cuspidatis, labello inflato, calcare limbo paullo breviore.

Herba humilis, pubescens, uniflora, caule 1·2–1·5 dm. alto simplici ima basi ramulos emittente inferne longe nudo apicem versus paucifoliato. *Folia* 3–5 cm. longa, alterna, petiolata, membranacea, ovata, acuminata vel caudato-acuminata, obscure crenato-serrulata, utrinque pubescentia, basi acuta, petiolo 0·5–1·5 cm. longo, nervis utrinque 5–6 gracillimis. *Pedunculi* breves, 2–3 cm. longi, decurvi, pubescentes, uniflori, medio unibracteati; bracteae ovato-lanceolatae, 2–3 mm. longae. *Flores* ad 2·5 cm. expansi. *Sepala* 2, ovato-rotundata, cuspidata, 6–8 mm. lata, inaequilatera, membranacea, pubescentia, 6–7-nervia. *Vexillum* lineari-oblongum, obtusum, 1·5 cm. longum, costa crassa, apiculata. *Alae* breves, 1·5–1·8 cm. longae, late arcuatim stipitatae; lobus basalis erectus, ovatus, acuminatus; distalis duplo longior, anguste dolabriformis, apice rotundatus; auricula dorsalis prominens, rotundata. *Labellum* pro planta magnum; limbus inflato-infundibularis, 2 cm. longus, in calcar paullo brevius sat robustum lente incurvus attenuatus, ore 1·5 cm. longo acuminato ascendente. *Filamenta* gracilia; antherae didymae. *Ovarium* lente falcatum, acuminatum.

Eastern Himalaya: Sikkim; alt. 7500 ft., *Treutler* 236 in Herb. Hort. Petrop.

A small pubescent species unlike any other known to me, with simple stem, few leaves, solitary shortly peduncled flowers, a remarkable narrow, oblong vexillum and acuminate basal lobes of the wings.—J. D. Hooker.

Fig. 1, pedicel, bract and ovary; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamens. *All enlarged.*

Tabula 2965.

IMPATIENS HARRISSII, *Hook. f.*

Balsaminaceae.

I. Harrissii, *Hook. f.* (*sp. nov.*); caule simplici, foliis ovatis acutis crenatis, pedunculis 1–2-floris, sepalis late ovatis subacutis, alarum lobo basali acuto.

Herba erecta, gracilis, glaberrima, 3-4 dm. alta, paucifolia, caule simplici inferne longe nudo. *Folia* 4–5 cm. longa, alterna, petiolata, membranacea, ovata, acuta, subgrosse crenata, basi acuta vel rotundata, nervis utrinque 5–6, petiolo gracili 1–2 cm. longo. *Pedunculi* folia subaequantes, graciles, erecti, 1–2-flori; pedicelli 1–2 cm. longi, basi bracteati; bracteae ovato-lanceolatae, acuminatae, 3–4 mm. longae, membranaceae, diu persistentes. *Flores* ad 2·5 cm. expansi; raphides 0. *Sepala* 2, ovata, obtusa, 4–4·5 mm. longa, membranacea, nervis reticulatis. *Vexillum* orbiculare, 1·2 cm. diametro, apice intruso, costa infra medium dorso carinata, apiculata. *Alae* 2·2 cm. longae, basi cuneatae; lobus basalis trigonus, distalis multo major, recurvus, semilunaris, apice rotundatus; auricula dorsalis parva, protrusa. *Labellum* cornutum, corniforme, totum 2·5 cm. longum; limbus oblique infundibularis, in calcar lente incurvum sensim attenuatus, ore elongato oblongo ascendente fere erecto apice rotundato apiculato. *Filamenta* brevia, linearia; antherae superpositae, didymae, obtusae. *Ovarium* lineare, lente falcatum. *Capsulae* immaturae erectae, 1·3 cm. longae, subfalcatim fusiformes, inaequilaterae, acutae, oligospermae. *Semina* immatura oblonga, 4 mm. longa.

Western Himalaya: Western Kashmir, Chitral and Mirga; *S. A. Harriss*, Chitral Relief Exped. 15990 in Herb. Hort. Petrop.

There are five specimens of this species in the Herbarium of the Imperial Bot. Gardens of St. Petersburg, collected by Surgeon S. A. Harriss during the operations of the Chitral Relief Expedition of 1895. There were no examples of it in the Saharanpur Herbarium lent to me for examination. The whole plant, and especially the flowers, are of a most delicate texture.—J. D. Hooker.

Fig. 1, pedicel, bracts and ovary; 2 and 3, sepals; 4, standard; 5, wing; 6, lip; 7, stamens; 8, peduncle, bracts and capsules; 9, seed. *All enlarged.*

Tabula 2966.

IMPATIENS OLIGONEURA, *Hook. f.*

Balsaminaceae.

I. oligoneura, *Hook. f.* (*sp. nov.*); foliis ovatis grosse crenatis lucidis, nervis utrinque 3–5, pedunculis unifloris, bracteis late ovatis, sepalis ovatis 9–10 mm. longis inaequilateris dentatis basi gibbis, antheris cuspidatis.

Herba 6 dm. alta, erecta, ramosa, glaberrima, floribus mediocribus, caule sat robusto, ramis ramulisque gracilibus. *Folia* 4–6 cm. longa, alterna, petiolata, membranacea, lucida, ovata vel elliptica, acuminata, grosse crenata crenis apiculatis, basi cuneata, nuda vel glandulis paucis minutis marginata, in petiolum 1–4 cm. longum gracilem angustata, nervis utrinque 3–5 gracillimis. *Pedunculi* 3–4 cm. longi, filiformes, uniflori, alte supra medium unibracteati; bractea late ovata vel orbicularis, cuspidata, dentata, caduca. *Flores* 3–3·5 cm. expansi, rosei? *Sepala* 2, oblique ovata vel ovato-oblonga, acuminata, 9–10 mm. longa, valde inaequilatera, uno latere basi gibba, costa dorso alata, marginibus dentatis integerrimisve. *Vexillum* oblatum, 1·7 cm. latum, muticum, disco incrassato, carina media apice nodosa percursum. *Alae* basi late cuneatae, 2·2 cm. longae; lobus basalis rotundatus; distalis inflexus, multo major, orbicularis vel late dolabriformis, apice rotundatus; auricula dorsalis elongata, inflexa. *Labelli* limbus infundibularis, 2 cm. longus, in calcar tenue limbo brevius apice clavellatum attenuatus, ore ascendente 1·2 cm. longo obtuso apiculato attenuato. *Filamenta* brevia, lata; antherae cuspidatae. *Ovarium* fusiforme, rectum, acuminatum. *Capsulae* immaturae, anguste lineares.

China: Szechuan; *Potanin* in Herb. Hort. Petrop.

A species well marked by its few-nerved membranous lucid not flaccid leaves, long naked peduncles with a toothed caducous bract not far beneath the flower and the dorsally winged often denticulate sepals. I have seen but one specimen.—J. D. Hooker.

Fig. 1. peduncle, bract and ovary; 2, 3 and 4, sepals; 5, standard; 6, wing; 7, lip; 8, stamen; 9, ovary. *All enlarged.*

Tabula 2967.

IMPATIENS ODONTOPETALA, *Maxim.*

I. odontopetala, *Maxim. in Act. Hort. Petrop.* vol. xi. (1890), p. 95; ramosissima, parvifolia, foliis breviter petiolatis oblongis obtusis grosse crenatis, pedunculis unifloris vel bifloris, pedicello inferiore ebracteato, antheris acutis.

Herba ramosissima, foliosa, parvifolia, multiflora, glaberrima, caule sat robusto ascendente, ramis ramulisque gracilibus divaricatis. *Folia* 3–4 cm. longa, alterna, sessilia et breviter petiolata, firma, oblonga, obtusa vel acuta, integerrima vel obscure crenata, subtus violescentia, basi acuta, rotundata vel subcordata, pauciglandulosa, petiolo 2–5 mm. longo filiformi, nervis utrinque 6–7 gracillimis. *Pedunculi* 1–2 cm. longi, fructiferi, modice elongati, uniflori, medio bracteati vel 2-flori, pedicello inferiore ebracteato, superiore medio vel superne bracteato; bracteae minutae, ovatae. *Flores* 2–2·5 cm. longi, pallide flavidi. *Sepala* 2, fere orbicularia, apiculata, 6–7 mm. lata, firma. *Vexillum* parvum, sepalum aequans, orbiculare, cucullatum, costa dorso supra medium crista crassa, subdeltoidea vel linguaeformi aucta, sub apice uncinata. *Alae* subsessiles, 2 cm. longae, lobus basalis oblongus, obtusus, erectus; distalis paullo longior, dolabriformis, apice rotundatus; auricula dorsalis elongata, inflexa. *Labellum* infundibulare, in calcar incurvum limbo dimidio brevius attenuatum, ore horizontali longe producto acuminato. *Filamenta* brevia, linearia; antherae acutae. *Ovarium* lineare, acuminatum. *Capsula* immatura 1·7 cm. longa, angusta, linearis, acuta.

China: Kansu; Lian-tsan-tsy, *Potanin* in Herb. Hort. Petrop.

The specimen in the St. Petersburg Herbarium is a very fine many-flowered one, but with no mature capsule. It is accompanied by a drawing of the floral organs by Maximowicz, which is exact in all respects but the wings. He thus describes the wings, 'alis circuiter oblique ellipticis bilobis, lobo vexillo proximo minute ovato vel orbiculato infra apicem mucronato, majore longe exserto, valde undulato ovato obtusiusculo latere exteriore infra apicem profunde emarginato cum mucrone aculeato e sinu.' I have carefully examined four flowers

of this species which includes 8 alae; in them I find uniformly an oblong-ovate obtuse erect basal lobe and a rather longer simply dolabriform distal lobe with a rounded apex in which there is no trace of a deep notch with a mucro in the sinus. The undulation attributed to the distal lobe is due to that organ not having been carefully spread out, as is evident from a reference to the figure of it in the sketch accompanying the specimen. A paper capsule attached to the sheet of the Herbarium contains Maximowicz's separated floral organs with the exception of the alae.

It is unfortunate that the specific name adopted for this species should run counter to fact. I may add that no one having had experience of the great difficulty of laying out the wings of herbarium specimens of Balsams will be surprised at even so accurate a botanist as Maximowicz having been deceived by the ragged end of the distal lobe.—J. D. HOOKER.

Fig. 1, peduncle, bract and ovary; 2, standard; 3, sepal; 4, wing; 5, lip; 6, stamen. *All enlarged.*

Tabula 2968.

IMPATIENS POTANINI, *Maxim.*

Balsaminaceae.

I. Potanini, *Maxim. in Act. Hort. Petrop.* vol. xi. (1890), p. 90; foliis oblongis vel ovatis breviter petiolatis grosse crenato-dentatis, pedunculis brevibus 2–3-floris, floribus luteis, sepalis orbicularibus, antheris mucronatis.

Herba 6–10 dm. alta, glaberrima, multi-parviflora, caule inferne sat robusto ramoso basi decumbente, radicibus fibrosis. *Folia* 5–10 cm. longa, alterna, breviter petiolata vel summa sessilia membranacea, ovata vel oblonga, acuta vel acuminata, grosse crenato-serrata vel dentata, crenis apiculatis, basi acuta, nuda vel glandulis paucis stipitatis ciliata, in petiolum gracilem 0·5–1·5 cm. longum angustata, nervis utrinque 5–6. *Pedunculi* foliis multo breviores, 1–2 cm. longi, 2–3-flores; pedicelli breves, ambo infra medium tantum bracteati, fructiferi paullo elongati; bracteae ovato-lanceolatae, acuminatae. *Flores* ad 1·5 cm. expansi, pallide lutei. *Sepala* 2, orbicularia, apiculata vel mucronata, 4–5 mm. diametro, concava, vitrea, saepe inaequilatera. *Vexillum* orbiculare vel oblatum, 6–8 mm. latum, cucullatum, costa dorso medio crista tumida apice in cuspidem producta. *Alae* breves, 1·5 cm. longae, sessiles; lobus basalis parvus, obovato-oblongus, erectus, crassiusculus; distalis duplo longior, late dolabriformis vel semilunaris; auricula dorsalis magna inflexa. *Labelli* limbus scaphiformis, 12 mm. longus, horizontalis, quasi stipitatus, acuminatus, subtus calcare basi lato incurvo vel involuto, 16 17 mm. longo apice obtuso auctus. *Filamenta* brevia, lata; antherae mucronatae. *Ovarium* lineare, subacutum. *Capsulae* 1·5 cm. longae, anguste fusiformes, acuminatae, membranaceae, oligospermae. *Semina* 3–5 mm. longa, oblonga, laevia.

China: Kansu; Lian-tsan-tsy in the Hung-topo Mts., *Potanin* in Herb. Hort. Petrop.: Mt. Mison, *Rev. F. R. Haigh* in Herb. Mus. Brit.

There are two sheets of specimens named *I. Potanini* by Maximowicz, of which one is of a very different species from the plant above described though similar in aspect, to which I have given the MSS. name of *I. deludens*.

The British Museum specimens collected by the Rev. F. R. Hugh in 1839 agree so closely with the description of Maximowicz, and with my own drawn up on specimens lent from St. Petersburg, that I have little doubt of their identity.—J. D. Hooker.

Fig. 1, sepal; 2 and 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary; 8, peduncle, bracts and capsules. *All enlarged.*

Tabula 2969.

IMPATIENS RECURVICORNIS, *Maxim.*

Balsaminaceae.

I. recurvicornis, *Maxim. in Act. Hort. Petrop.* vol. xi. (1890), p. 88, caule gracili, foliis ovato-lanceolatis crenulatis utrinque 6-8-nerviis, pedunculis unifloris, sepalis dimidiato-ovatis, antheris acuminatis.

Herba gracilis, 4–5 dm. alta, parce ramosa, glaberrima, caule parce ramoso debili, ramulis gracillimis apices versus foliosis. *Folia* 5–8 cm. longa, alterna, petiolata, membranacea, ovato-lanceolata, acuminata, crenulato-serrata crenis apiculatis, basi acuta eglandulosa, in petiolum subalatum 1–2 cm. longum angustata, nervis utrinque 6–8. *Pedunculi* 5–7 cm. longi, gracillimi, patentes, uniflori, supra medium unibracteati; bractea ovata, longe aristatim acuminata, 3–4 mm. longa, integerrima vel dentata. *Flores* 3 cm. longi, roseo-purpurei. *Sepala* 2, dimidiato-ovata, acuminata, obscure denticulata, 7 mm. longa, costa unilaterali crassa. *Vexillum* amplum, rotundatum, 1·3 cm. latum, basi profunde bilobum, costa dorso incrassata apice in rostrum horizontale acutum robustum 5 mm. longum producta. *Alae* subsessiles, 1·8–2 cm. longae; lobus basalis parvus, oblate oblongus, distalis multo major, erectus, oblongus, apice rotundatus; auricula dorsalis magna, inflexa. *Labelli* limbus cymbiformis, acutus, ascendens, 1·3–1·5 cm. longus, subtus in calcar 1·8 cm. longum apice gracile et involutum attenuatus. *Filamenta* brevia, lata; antherae acuminatae. *Ovarium* fusiforme, rectum. *Capsulae* 2·5 cm. longae, anguste lineares, acuminatae, strictae, oligospermae. *Semina* **immatura? oblonga, compressa, 3–5 mm.** longa, subrugulosa, castanea.

China: Szechuan; near Tsian-pu, *Potanin* in Herb. Hort. Petrop.

From a sketch of unopened flowers in a very young state, by Maximowicz, attached to the sheet of specimens, it would appear that the curvature of the spur of the lip is the reverse of the normal in the genus, but I find it as represented in the specimens here figured.—J. D. Hooker.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary. ***All enlarged.***

M.S. del. et lith.

Tabula 2970.

IMPATIENS ROBUSTA, *Hook. f.*

Balsaminaceae.

I. robusta, *Hook. f.* (*sp. nov.*); elata, robusta, ramosa, grandiflora, foliis ovatis vel rotundatis grosse crenatis utrinque 8–10-nerviis pedicellis alte bracteatis, sepalis orbicularibus alarum lobis ambobus apice filiferis.

Herba annua, elata, robusta, ramosa, glaberrima, grandiflora, caule inferne crassitie nunc pollicis nunc pennae anserinae, succulento, ramis et ramulis sensim tenuioribus ultimis gracilibus. *Folia* ampla 0·5–1·5 dm. longa, alterna, petiolata, suprema subsessilia, tenuiter membranacea, sicca laete viridia, ovata vel rotundata, acuta vel acuminata, nunc caudata, grosse crenata vel crenato-serrata setis additis 0, basi rotundata, cuneata vel acuminata, nervis utrinque in longioribus 8–10, in brevioribus 5–7, petiolo 1–7 cm. longo. *Pedunculi* 2–3 cm. longi, graciles, 1–2-flori; pedicelli breves, medio vel altius unibracteati; bracteae ovato- vel lineari-lanceolatae, 3–5 mm. longae. *Flores* 4 cm. longi. *Sepala* 2, orbicularia, acuminata, 10–15 mm. diametro, viridia, costa tenui ima basi tumida. *Vexillum* orbiculare vel subreniforme, 1·4–1·6 cm. latum, costa anguste cristata, crista medio tumida apice uncinata. *Alae* sessiles, 2·5–2·8 cm. longae; lobus basalis oblate rotundatus, longe filiferus; distalis late dolabriformis, acuminatus acumine filifero; auricula dorsalis magna, inflexa. *Labellum* sacciforme vel saccatim infundibulare, 4 cm. longum, basi in calcar breve robustum, 5–10 mm. longum, truncatum vel bidentatum, attenuatum; ore ascendente acuminato. *Filamenta* brevissima, lata; antherae didymae, obtusae. *Ovarium* angustum, acuminatum, rectum. *Capsulae* immaturae anguste lineares.

China: Szechuan; *Potanin* in Herb. Hort. Petrop.

A noble species with the leaves bright green, fifteen years after collection. The labellum varies considerably between saccate and infundibular. The sepals are rather thick in texture: the lip fasciate, probably with rose-purple, as in many of its allies.—J. D. Hooker.

Fig. 1, peduncle, ovary and bud; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamen. *All enlarged.*

Tabula 2971.

IMPATIENS WALDHEIMIANA, *Hook. f.*

BALSAMINACEAE.

I. Waldheimiana, *Hook. f.* (*sp. nov.*); elata, ramosa, grandiflora, foliis ovatis grosse crenatis utrinque 5–7-nerviis, sepalis ovatis aristatim acuminatis, alarum lobo basali parvo apice filifero, distali amplo semilunari.

Herba elata, robusta, ramosa, glaberrima, grandiflora, ramis ramulisque ascendentibus. *Folia* 6–10 cm. longa, alterna, petiolata, membranacea, ovata, caudatim acuminata, grosse crenato-serrata, setulis interjectis 0, suprema basi rotundata, cetera acuta vel acuminata, in petiolum robustum 3–5 cm. longum angustata, basin versus glandulis stipitatis saepe marginata, nervis utrinque 5–7 gracillimis. *Pedunculi* 3–4 cm. longi, biflori; pedicelli brevissimi, medio unibracteati. *Flores* expansi 4 cm. longi. *Sepala* 2, ovata, aristato-acuminata, 1–4 cm. longa, basi cordata sinu angusto, costa dorso infra medium carinata. *Vexillum* amplum, orbiculare, basi truncatum, 2·2 cm. latum, cochleatum, costa dorso modice alata, ala in cuspidem recurvam producta. *Alae* 3 cm. longae, late breviter stipitatae; lobus basalis parvus, distali incumbens, ovatus, acuminatus, apice filifer; distalis amplus, semilunaris, auricula dorsalis elongata, inflexa. *Labelli* limbus infundibularis, 2·5 cm. longus, in calcar incurvum limbo multo brevius apice profunde bifidum attenuatus ore 2·5 cm. longo fere horizontali acuminato. *Filamenta* gracilia, 5 mm. longa; antherae didymae, obtusae. *Ovarium* ovideum, acuminatum.

CHINA: Szechuan; *Potanin* in Herb. Hort. Petrop.

A handsome large-leaved and large-flowered species of which I have seen but one specimen with one expanded flower; it differs from its allies in the ovate sepals cordate at the base, with a long, slender cuspidate apex. I have named it in compliment to Dr. Alex. Fischer von Waldheim, the Director of the magnificent Imperial Botanic Gardens and Herbarium of St. Petersburg, to whose good offices I am indebted for the loan of the Balsams in that Institution.—J. D. HOOKER.

Fig. 1, sepal; 2, standard; 3, wing; 4, stamen. ***All enlarged.***

Tabula 2972.

IMPATIENS APSOTIS, *Hook. f.*

Balsaminaceae.

I. apsotis, *Hook. f.* (*sp. nov.*); flaccida, parviflora, foliis ovatis acutis vel obtusis crenatis, pedunculis 1–2-floris, pedicellis supra medium tantum minute bracteatis, sepalis linearibus, alarum lobo basali postice in lobulum trigonum auriculam horizontaliter gerentem producto.

Herba 2–10 dm. alta, flaccida, glaberrima, parviflora, caule gracili (in exemplaribus altioribus robusto), inferne saepe longe aphyllo simplici vel parce ramoso, ramis ramulisque gracilibus. *Folia* 3–5 cm. longa, alterna, petiolata, tenuiter membranacea, ovata, acuta vel acuminata, subgrosse crenata crenis apice muticis vel apiculatis, basi acuta, eglandulosa, nervis utrinque 4–5, petiolo 1–5 cm. longo gracillimo. *Pedunculi* petiolis breviores vel longiores, fructiferi elongati, filiformes, 1–2-flori, pedicelli 1 cm. longi, ambo supra medium tantum bracteati; bracteae minutae, ovato-lanceolatae. *Flores* ad 1 cm. expansi. *Sepala* 2, linearia, acuta, 5–6 mm. longa, viridia, flaccida, costa carinata. *Vexillum* viride, cymbiforme, 4–5 mm. longum, erectum, muticum, costa breviter vel late alata. *Alae* stipitatae, 8–10 mm. longae; lobus basalis antice ovatus, acutus, postice in lobulum trigonum auriculam dorsalem reniformem horizontaliter gerentem productum; lobus distalis basali triplo longior, stipitatus, dolabriformis, apicem obtusum versus angustatus. *Labelli* limbus scaphiformis, lanceolatus, acuminatus, 8 mm. longus, basin versus infundibularis et in calcar incurvum apice clavellatum limbo longius attenuatus. *Filamenta* filiformia, elongata; antherae minutae, didymae, obtusae. *Ovarium* lineare, apice paullo incurvum. *Capsulae* 3–3·5 cm. longae, anguste lineares, acuminatae, 3–5-spermae. *Semina* ellipsoidea, 3–5 mm. longa, laevia.

China: Western Szechuan; in the Tibetan Valleys of Mao-chu and Tatsienlou, *Potanin* in Herb. Hort. Petrop.

There are many excellent specimens of this species in the St. Petersburg Herbarium, varying greatly in size, but very little in habit and foliage. The small flowers of herbarium specimens are troublesome to analyse, owing to the flaccidity, crumpled condition, contortion and

cohesion of the organs. The wings are characteristic in that the dorsal auricles are placed horizontally on a dorsal lobule of the wing. I have not met with this arrangement in any other species of the genus.—J. D. Hooker.

Fig. 1, peduncle, bracts and ovary; 2 and 3, sepals; 4, standard; 5, wing; 6, lip; 7, stamen; 8, capsule; 9, seed. *All enlarged.*

M.S. del et lith.

Tabula 2973.

IMPATIENS AMABILIS, *Hook. f.*

Balsaminaceae.

I. amabilis, *Hook. f.* (*sp. nov.*); ramosissima, foliosa, floribus mediocribus, foliis ovatis acuminatis crenatis utrinque 6–8-nerviis, pedunculis 2-floris, pedicello inferiore basi, superiore medio bracteatis, sepalis ovato-rotundatis acutis, alarum lobo basali parvo rotundato, distali amplo apice bilobo, antheris acutis.

Herba annua, glaberrima, a basi ramosissima et foliosa, floribus mediocribus, caule basi robusto, ramis ascendentibus 6–8 dm. longis. *Folia* 4–8 cm. longa, alterna, petiolata, firma, ovata vel ovato-lanceolata, passim rotundata, acuminata, crenata vel crenato-dentata, basi rotundata vel cuneata et in petiolum 1–2 cm. longum repente angustata, glandulis 1–2 stipitatis marginata, nervis utrinque 6–8. *Pedunculi* 2–3 cm. longi, biflori; pedicelli 1–1·5 cm. longi, inferior basi solum, superior medio bracteati; bracteae ovatae, acuminatae. *Flores* roseo-purpurei, 3–5 cm. expansi. *Sepala* 2, ovato-rotundata, acuta, basi cordata, 6–7 mm. longa, firma. *Vexillum* orbiculare, 1·4 cm. diam., basi et apice bilobum, costa dorso medio rostrata vel breviter alata et apice uncinata. *Alae* sessiles, 2 cm. longae; lobus basalis orbicularis, parvus, vix 5 mm. diametro, coriaceus; distalis late dolabriformis, dorso infra apicem late excisus; auricula dorsalis parva, sinui opposita. *Labelli* limbus cymbiformis, ascendens, 1–1·2 cm. longus, apice obtuso apiculato, basi in calcar incurvum limbo aequilongum vel paullo longius apice bidentatum attenuatus. *Filamenta* brevia, late linearia; antherae cuspidatae. *Ovarium* fusiforme, rectum, acuminatum, 5-gonum.

China: Szechuan: between Luang-czi and Fung-czsha-lo, *Potanin* in Herb. Hort. Petrop.

A handsome species with flowers probably rose-purple in the living state.—J. D. Hooker.

Fig. 1, peduncle, bracts, and flowers; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary. *All enlarged.*

Tabula 2974.

IMPATIENS NOTOLOPHA, *Maxim.*

Balsaminaceae.

I. notolopha, *Maxim. in Act. Hort. Petrop.* xi. (1890). p. 91 : gracillima, flaccida, minutiflora, foliis ovato-rotundatis obtusis crenatis, pedunculis capillaribus 2–5-floris, pedicello infimo ebracteato, ceteris infra florem solum bracteatis, floribus flavis, sepalis ovato-rotundatis.

Herba annua, gracillima, 4–5 dm. alta, flaccida, glaberrima, minutiflora, caule subsimplici basi longe nudo laxe foliato. *Folia* 4–6 cm. longa, alterna, gracillime petiolata, tenuiter membranacea, late ovata vel rotundata, obtusa, grosse crenata setulis interjectis 0, basi cuneata in petiolum filiformem 3–4 cm. longum abrupte angustata, suprema subsessilia, basi rotundata vel cordata, costa nervisque utrinque 4–5 exilibus. *Pedunculi* axillis superioribus enati, capillares, 2–5-flori ; pedicelli florentes 1–2 cm. longi, infimi ebracteati, sequentes infra florem unibracteati ; bracteae lineares 5 mm. longae, erectae, obtusae, persistentes. *Flores* ad 1 cm. expansi, flavi. *Sepala* 2, ovato-oblonga vel rotundata, subacuta vel obtusa et mucronulata, 4 mm. longa, membranacea, viridula. *Vexillum* parvum, suborbiculare, lateribus appressis 5 mm. longum, costa dorso ala lata viridi ultra laminam producta apice rotundata aucta. *Alae* sessiles, 1·5 cm. longae ; lobus basalis minutus, carnosus, rotundatus ; distalis stipitatus, rotundatus vel late dolabriformis, subacutus, dorso medium versus alte fissus ; auricula dorsalis minuta, sinui opposita. *Labelli* limbus minutus, vix 4 mm. longus, scaphiformis, ovatus, obtusus, apiculatus ; calcar 1·7–2 cm. longum, abrupte incurvum, basi diametro limbum aequans, dein sensim attenuatum, apice clavellatum. *Filamenta* brevia, linearia ; antherae didymae, obtusae. *Ovarium* fusiforme. *Capsulae* 1·5–2·5 cm. longae, anguste fusiformes, acuminatae, polyspermae. *Semina* ellipsoidea, laevia, 2·5 mm. longa, brunnea.

China : North Szechuan ; valley of Houtou river. *Potanin* in Herb. Hort. Petrop.

This species is remarkable for slenderness, very long almost filiform petioles, broad membranous obtuse deeply crenate leaves, and the minute limb of the lip. Maximowicz discusses the presence in one

bud that he examined of a supplementary sepal: "in alabastro unico vidi sepalum e superioribus evolutum lineari-lanceolatum." I fail from this brief description to understand its position in the flower. I have not seen perfect flowers.—J. D. HOOKER.

Fig. 1, raceme; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary; 8, capsule; 9, seed. ***All enlarged.***

M.S. del. et lith.

TABULA 2975.

IMPATIENS EXIGUIFLORA, *Hook. f.*

BALSAMINACEAE.

I. exiguiflora, *Hook. f.* (*sp. nov.*) ; caule gracili firmo-ramoso, foliis ovato-lanceolatis crenulatis vel serrulatis utrinque 7–9-nerviis, pedunculis bifloris, pedicellis medio tantum bracteatis, sepalis dimidiato-ovatis.

Herba 3 dm. alta, erecta, ramosa, exiguiflora, glaberrima, caule firmo, ramis gracilibus erectis. *Folia* 4–6 cm. longa, alterna petiolata, firma, ovato-lanceolata, acuminata, crenulata vel serrulata, crenis apiculatis, basi acuta in petiolum 0·5–1 cm. longum angustata, costa nervisque utrinque 7–9 subtus prominulis. *Pedunculi* foliis superioribus medianisque axillares, capillares, 3–4 cm. longi, biflori ; pedicelli 1–2 cm. longi, supra medium tantum unibracteati ; bracteae minutae, setaceae. *Flores* 6-8 mm. expansi. *Sepala* dimidiato-ovata, 3 mm. longa, subfalcata, costa marginalis longa, cuspidata. *Vexillum* orbiculare, cucullatum, costa dorso supra medium rostrata. *Alae* 8 mm. longae, sessiles ; lobus basalis parvus, erectus ; distalis stipitatus, semilunaris ; auricula dorsalis protrusa. *Labelli* limbus infundibularis, alte cymbiformis, 4–5 mm. longus, in calcar rectum gracillimum 1·8 cm. longum attenuatus, ore horizontali acuto. *Filamenta* brevia ; antherae didymae, obtusae. *Ovarium* ovoideum, obtusum. *Capsulae* ad 1·5 cm. longae, fusiformes, recto-oligospermae. *Semina* oblongo-rotundata, 4 mm. longa, creberrime minute tuberculata.

CHINA : Hupeh ; Patung distr., *Henry* 1820 in Herb. Hort. Petrop.

I find no specimen of this unpretentious little species in Herb. Kew.—J. D. HOOKER.

Fig. 1, sepal ; 2, standard ; 3, wing ; 4, lip ; 5 stamen ; 6, ovary ; 7, capsule ; 8, seed. *All enlarged.*

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Tabula 2976.

ASTEROPHORUM EBURNEUM, *Sprague*.

Tiliaceae. Tribus Brownlowieae.

A. eburneum, *Sprague in Kew Bull.*, 1908, p. 249. Species unica.

Arbor subramosa, 4·5 m. alta (teste *Spruce*). *Rami* striolati, primo stellato-pubescentes, mox glabrescentes. *Folia* oblongo-ovata, basi rotundata vel subtruncata, apice obtusiuscule acuminata, 12–25 cm. longa, 6–10 cm. lata, utrinque satis inconspicue subtiliter reticulata, supra in nervis stellato-pubescentia vel puberula, ceterum glabrescentia, subtus minute puberula et lepidota; nervi laterales utrinque 8–10; petioli 3·5–7 cm. longi. *Stipulae* subulatae, 1·5 mm. longae, caducae. *Pedunculi* 5·5–6·5 cm. longi, ramis circiter 4. *Flores* unisexuales, ut videtur monoici; masculi tantum visi. *Fl.* ♂ in apicibus ramorum rhachis umbellati, eburnei et odorati (teste *Spruce*), pedicellis 4–5 mm. longis. *Calyx* campanulatus, trilobatus, 4·5 mm. longus, extra stellato-tomentellus, intra glaber, lobis deltoideis 1·5–2 mm. longis. *Petala* 5, imbricata, oblanceolata, apice rotundata, 7 mm. longa, 2–2·5 mm. lata, glabra. *Stamina* 32–34, omnia fertilia; filamenta usque ad 6 mm. longa, inferne in tubum brevem pistilli rudimentum circumdantem connata, exteriora breviora; antherarum thecae apice contiguae, deorsum divergentes. *Capsula* subturbinata, obtuse pentagona, apice leviter depressa, 1·5–2·3 cm. longa, 1·7–2 cm. diametro, extra dense stellato-pubescens, 5-locularis, loculicida, loculis monospermis, valvis in apicibus ramorum carpophori stellati suspensis, endocarpio crustaceo fulvo nitidulo tandem soluto. *Semina* ovoideo-globosa, cinerea, brunneo-variegata, 6–7 mm. diametro; endospermium carnosum, cotyledonibus foliaceis, radicula exserta.

Ecuador. Chonana, near Guayaquil, *Spruce*, 6260.

The most satisfactory position for *Asterophorum* seems to be beside *Christiana*, with which it agrees in the nature of its inflorescence and flowers. The only important difference is in the fruit, which is a loculicidal capsule in *Asterophorum*, and consists of several follicles in *Christiana*.

Pityranthe has a fruit like that of *Asterophorum*, but the flowers differ in having staminodes.—T. A. Sprague.

Fig. 1, flower; 2, section through flower; 3, stellate hair from calyx; 4, petal; 5, anthers; 6, capsules; 7, seed; 8, embryo. *All enlarged except* 6, *which is of natural size.*

Tabula 2977.

PITTOSPOROPSIS KERRII, *Craib.*

Icacinaceae. Tribus Icacineae.

P. Kerrii, *Craib in Kew Bull.*, 1911, p. 28; *Gagnepain in Lecomte, Fl. Gen. Indo-Chine*, vol. i. p. 832; *Craib, Contrib. Fl. Siam in Aberd. Univ. Stud.* No. 57 (1912), p. 38. Species unica.

Frutex sempervirens, ad 4·5 altus (ex *Kerr*); ramuli subteretes, glabri, cortice fusco-brunneo vel rubro-brunneo reticulato-striato obtecti. *Folia* alterna, oblongo-oblanceolata vel oblonga, apice acuminata vel fere caudato-acuminata, subobtusa, basi cuneata, 14–21 cm. longa, 4–6·5 cm. lata, chartacea, pagina utraque nisi costa subtus minute parceque pilosula glabra, margine cartilagineo undulato, nervis lateralibus utrinque 5–7 intra marginem anastomosantibus cum nervis transversis supra leviter impressis subtus prominentibus, petiolis 2 cm. longis supra canaliculatis fere glabris suffulta. *Inflorescentia* axillaris, pedunculo communi 1·5–2·5 cm. longo suffulta; cymulae 3-florae, pedunculo circiter 4 mm. longo suffultae; pedicelli breves, nodis supremis articulatis, bracteolis 3–4 infra articulationem instructi. *Calycis* lobi late deltoidei, acuti, 1 mm. longi, 1 mm. lati, extra pilosuli, sub anthesin reflexi, infructescentes fructui adpressi. *Petala* in alabastro superne induplicato-valvata, inferne aperta, sub anthesin elongato-spatulata, circiter 7 mm. longa et 2 mm. lata, dorso medio parcissime pilosula. *Filamenta* complanata, superne subito contracta, 5 mm. longa, basi 0·75 mm. lata; antherae versatiles, oblongae, basi bilobae, fere 2 mm. longae, connectivo apice producto. *Discus* cupularis, ovario adnatus, circiter 0·75 mm. altus. *Ovarium* glabrum, circiter 1·75 mm. altum, ovulis 2 pendulis; stylus crassiusculus, apice brevissime bifidus, 3 mm. longus, glaber. *Fructus* immaturus cum pedicelli nodo supremo leviter incrassato deciduus.

Indo-China. Siam: Chiengmai, Doi Sutep, in evergreen jungle, 660–750 m., *Kerr*, 558, 558 A. Upper Burma: Southern Shan States, *Macgregor.*

The nearest ally of the genus *Pittosporopsis* is probably *Apodytes*, from which it may be distinguished by the aestivation of the petals—induplicate-valvate at the apex and open below—and by the non-excentric style.—W. G. Craib.

Fig. 1, flower-bud (the petals are induplicate-valvate at the apex and not imbricate as in the figure); 2, expanded flower; 3, calyx and pistil; 4, petal, front view; 5, stamen; 6, ovary, cut longitudinally. *All enlarged.*

M.Schelt et lith.

Tabula 2978.

OSTRYODERRIS LEUCOBOTRYA, *Dunn.*

Leguminosae. Tribus Dalbergieae.

O. leucobotrya, *Dunn in Kew Bull.*, 1911, p. 364; ab *O. gabonica*, Dunn, bracteis floralibus cymbiformibus ad anthesin persistentibus differt.

Frutex vel *arbor* parva, praeter inflorescentiam glabra; cortex laevis, lenticellatus. *Folia* 4- (3- vel 5-) juga, nigricantia, 15–25 cm. longa, petiolo 5-plo longiora; stipulae oblongo-lineares, 2·5 cm. longae, tarde deciduae; foliola superiora lateralia ovato- vel lineari-oblonga, acuminata, nonnunquam caudata, apice truncata vel retusa, basi rotundata, 6–9 cm. longa, chartacea; nervi circiter 6–8-jugi, infra paullo prominentes; petioluli 2–3 mm. longi; stipellae setaceae, 3 mm. longae. *Paniculae* angustae, terminales, 25–40 cm. longae, rhachi ut ramulis calycibusque dense velutina; ramuli floriferi 4–6 cm. longi, bracteis magnis deciduis suffulti. *Flores* dense conferti, 1·2–1·3 cm. longi; pedicelli graciles, 2–2·5 mm. longi; bracteae 0·9–1 cm. longae, albae, sericeae, deciduae; bracteolae 2, minutae. *Calyx* campanulatus 3–3·5 mm. longus, dentibus brevibus latis. *Petala* glabra, albida, nigricantia; vexillum ovatum, cuneatum, ad laminae basin paullo incrassatum; alae cuneatae; carinae petala basi falcata. *Stamina* diadelphia. *Ovarium* velutinum, 3–7-ovulatum. *Legumen* complanatum, oblongum, apice basique obtuse acutum, ala coriacea 4–5 mm. lata cinctum, 2-spermum, glabrum, flavidum.

Tropical Africa. Sierra Leone: in forest on the way to Lester Peak, *Scott Elliot*, 3842; Pangumu, *Smythe*, 62; rain forest, *Sierra Leone Herb.*, 35. Ivory Coast: Bingerville, *Chevalier*, 17,304.

The flowering specimen from which this drawing was made was collected by Scott Elliot in the Sierra Leone forests, the pod being added from specimens kindly lent by Dr. A. Chevalier from his own collection in Paris. The young panicle which is described as clothed with white bracts must present a striking object in November and December.—S. T. Dunn.

Fig. 1, flower bract; 2, flower opened with petals removed; 3, standard; 4, a wing; 5, a keel petal; 6, ovary; 7, pod; 8, part of pod with one valve removed, showing a seed of which the embryo is exposed. *All enlarged except 7 and 8, which are of natural size.*

Tabula 2979.

MURTONIA KERRII, *Craib.*

Leguminosae. Tribus Hedysareae.

M. Kerrii, *Craib in Kew Bull.*, 1912, p. 266, *et in Contrib. Fl. Siam in Aberd. Univ. Stud.* No. 57 (1912), p. 61. Species unica.

Suffrutex scandens; ramuli primo pilis uncinatis albidis brevibus rigidiusculis instructi, mox glabri vel fere glabri, virides, interdum brunneo-maculati, teretes. *Folia* imparipinnata, petiolo 3–7 cm. longo pilis iis ramulorum similibus instructo suffulta; stipulae ovatae, apice acuminatae, pungentes, basi auriculatae, circiter 1·7 cm. longae et 9 mm. latae, saepissime reflexae, virides, striatae, dorso breviter hirsutulae; foliola 5, terminali a lateralibus 1·5–2·5 cm. distante, lateralibus oppositis paribus inter se 3–4·5 cm. distantibus, lanceolata vel late lanceolata, apice acuminata, acuta, basi rotundata, subcordata, 5·5–16 cm. longa, 1·3–4·4 cm. lata, rigide chartacea vel fere subcoriacea, nervis lateralibus utrinque 16–18 obliquis intra marginem anastomosantibus supra conspicuis vel fere prominulis subtus prominentibus, nervis transversis subtus prominentibus, supra matura glabra nisi costa basin versus pilis paucis uncinatis instructa, subtus pallidiora, costa nervisque pilis parvis uncinatis instructa, margine cartilagineo crispato; rhachis pilis iis ramulorum similibus instructa; petioluli breves, validiusculi, supra canaliculati, albo-hirsuti; stipellae rigidae, lineari-lanceolatae, pungentes, ad 1 cm. longae, 1·5 mm. latae, subglabrae, nervatae. *Inflorescentia* axillaris, simpliciter paniculata, pedunculo 6–15 cm. longo inferne indistincte angulato angulis praecipue pilis uncinatis albidis instructo suffulta; flores solitarii vel gemini; bracteae lanceolatae vel ovato-lanceolatae, acutae, 2·5 mm. longae, 0·75 mm. latae, rigidiusculae, costatae, ciliatae; pedicelli teretes, 1·5 mm. longi. *Calyx* 3·5 mm. longus; lobi inter se longitudine subaequales, posteriores in unum late deltoideum apice integrum vel emarginulatum connati, laterales infimusque anguste deltoidei, acuti. *Vexillum* obovato-rotundatum, 8 mm. diametro, basi cuneatum; alae oblongae, basi obtuse sagittatae, 7·5 mm. longae, ungui gracili 1·5 mm. longo suffultae, medio carinae adhaerentes; carina obtusa, 7 mm. longa, ungui 2 mm. longo suffulta. *Stamen* vexillare liberum. *Ovarium* multi-ovulatum, lineare, 7 mm. longum; stylus circiter 2 mm. longus, stigmate capitato terminali.

Legumen compressum, ad 4·5 cm. longum, 4·5 mm. latum, ad 9-articulatum, stipitatum vel saepe ob semina inferiora abortiva longe pseudostipitatum, pilis iis ramulorum similibus tectum; semina compressa laevia, ad 3 mm. diametro.

Indo-China. Siam: cultivated in Chiengmai from seed collected at Lăkawn in mixed jungle, 360 m., *Kerr*, 1534, 'standard white, keel and wings purple.'

In general appearance the plant here figured resembles most the genus *Cruddasia*, which has, however, a fruit similar to that of *Pueraria*, whereas the subject of our plate has a true hedysaroid fruit. Although he has placed *Murtonia* in the tribe Hedysareae on account of the dehiscence of the fruit, the writer has failed to trace any genus there to which it could be said to be even remotely allied.—W. G. Craib.

Fig. 1, portion of undersurface of leaf, showing margin and hooked hairs; 2, portion of rhachis with two buds and bracts; 3, calyx laid open, showing androecium; 4, vexillum; 5, ala; 6, carina; 7, pistil with ovary cut longitudinally; 8, portion of pod; 9, seed. *All enlarged.*

Tabula 2980.

MICHOLITZIA OBCORDATA, *N. E. Brown.*

ASCLEPIADACEAE. Tribus MARSDENIEAE.

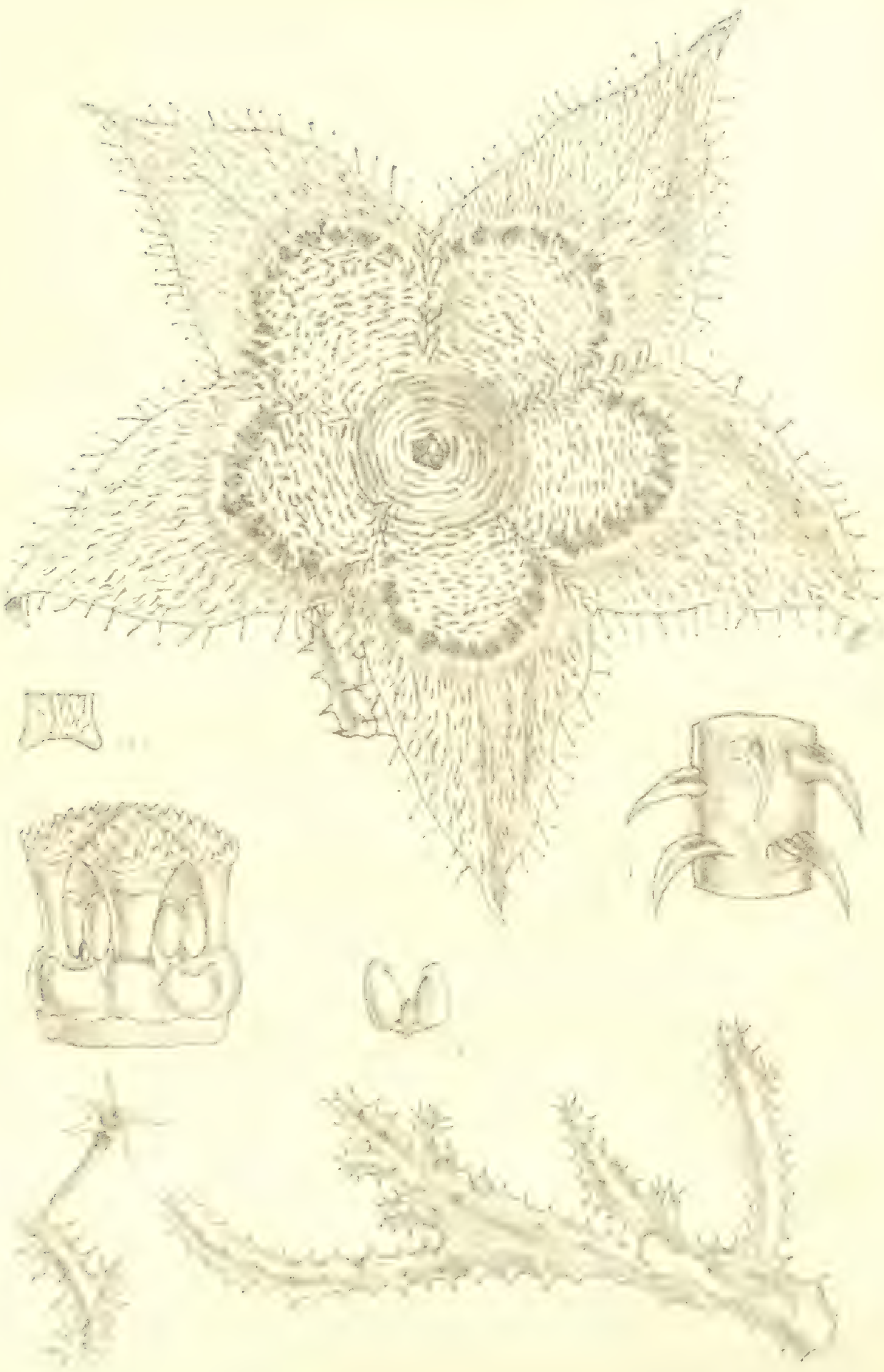
M. obcordata, *N. E. Brown in Kew Bull.*, 1909, p. 358; *Craib in Kew Bull.*, 1910, p. 201. Species unica.

Fruticulus circa 30 cm. altus, epiphyticus, ramosus, lactescens; rami erecti vel adscendentes, teretes, juniores adpresse puberuli, virides, demum glabri et cinerei. *Folia* opposita, firme vel subrigide coriacea, obcordata vel obovata, apice late emarginata vel truncata, basi cuneata, utrinque minute adpresse puberula; petioli 3–4 mm. longi; laminae 1·8–3·2 cm. longae, 1·4–2·3 cm. latae; stipulae minutissimae. *Cymae* ad nodos laterales sessiles vel subsessiles, 4–9-florae. *Pedicelli* 2 mm. longi, minute puberuli. *Calyx* parvus, 5-partitus; sepala 1 mm. longa, ovata, obtusa, minute puberula. *Corolla* urceolato-tubulosa vel conico-tubulosa, basi 5-gibbosa, extra puberula, intus villosa, olivaceo-virens, lobis rufescentibus; tubus 6 mm. longus, basi 3 mm. diametro, apice 1·75–2 mm. diametro; lobi patentes, 1·5 mm. longi, 1 mm. lati, deltoideo-ovati, acuti. *Coronae* tuberculi carnosi, apice obtusi vel emarginati, dorso sulcati, lutei.

INDO-CHINA. Upper Burma: Karenni Country; Ywathit, 800 m. alt., *Micholitz.* Manipur; *Meebold*, 6732.

This plate was prepared from a living plant cultivated in the Royal Botanic Gardens, Glasnevin, Dublin, which was obtained from Messrs. Sander and Sons, of St. Albans, who state that it was sent home by Micholitz when collecting in India and Burma. The dried specimens collected by Micholitz were subsequently presented by Messrs. Sander to Kew. A second specimen of this curious plant has also been received at Kew from Mr. A. Meebold. The affinity of the genus is in the neighbourhood of *Marsdenia*.—N. E. BROWN.

FIG. 1, a flower; 2, a flower in section, with the calyx removed; 3, corona, stamens and style; 4, a stamen with a tubercle of the corona on its back; 5, pollen-masses. *All enlarged.*



N. E. Br. anal. M.S del et lith.

Tabula 2981.

EDITHCOLEA GRANDIS, *N. E. Brown.*

Asclepiadaceae. Tribus Stapelieae.

E. grandis, *N. E. Brown in Kew Bull.*, 1895, p. 220, *et in Dyer, Fl. Trop. Afr.* vol. iv. sect. i. p. 492; *K. Schum. in Engl. u. Prantl, Pflanzenfam., Nachtr. zum* ii.–iv., p. 288, *et in Ann. Ist. Bot. Roma*, vol. vii. p. 43; *Berger, Stapelieen und Kleinien*, p. 133, fig. 32; affinis *E. sordidae*, N. E. Br., sed corollae lobis ovatis acuminatis concentrice rugosis nec dense tuberculatis et colore differt.

Herba succulenta, ramosa, aphylla; rami decumbentes vel procumbentes, ad 6 cm. vel ultra longi, crasse carnosi, pentagoni, glabri, angulis dentatis; dentes deltoidei, apice breviter spinoso-acuti, brunnei. *Pedicelli* subsolitarii, prope apicem ramorum enati, 1·5–1·8 cm. longi, 3 mm crassi. *Calyx* 5-partitus; sepala 8 mm. longa, 2–2·5 mm. lata. *Corolla* 10–12·5 cm. diametro; tubus parvus, 6 mm. longus et latus; limbus planus vel patelliformis, usque ad medium 5-lobus, extra glaber, intus in disco concentrice lamellato-rugosus et lineis quinque radiantibus pilorum longorum clavato-capitatorum munitus; lobi 4–5 cm. longi, 2·5–3 cm. lati, ovati, acuti vel acuminati, vix rugosi, pilis tenuibus clavatisque hirti et ciliati. *Coronae* exterioris lobi patuli, transverse oblongi, emarginato-bifidi, concavi, intus hirti; interioris lobi erecti, 1·5 mm. longi, late lineares, basi gibbosi, apice triangulari-dilatati et inflexo-conniventes, echinulati, glabri, quam columna staminum stylusque longior.

Somaliland. Henweina Valley, about 1000 m. alt., *Miss Edith Cole, Mrs. Lort Phillips, Drake-Brockman*, 97.

The only other known species of this curious genus is a native of Socotra, and is very different from that here figured in the colour and the rugose surface of its flowers.—N. E. Brown.

Fig. 1, teeth on young part of the stem; 2, corona: 3, one lobe of the outer corona, seen from above; 4, pollen-masses. *All enlarged.* N.B.—The figures of the stems represent the dried specimen, which is evidently very much shrivelled, and when alive was perhaps four times as stout.

Tabula 2982.

SATANOCRATER PARADOXA, *Lindau.*

Acanthaceae. Tribus Acanthoideae.

S. paradoxa, *Lindau in Engler u. Prantl, Pflanzenfam., Nachtr. zu* iv., 3 *b,* p. 305; affinis *S. somalensi,* Lindau, sed ab ea et etiam a speciebus omnibus aliis adhuc descriptis corolla et disco distincta.

Fruticulus, ramis teretibus primo puberulis mox glabrescentibus, rateralibus brevibus foliatis. *Folia* ovata vel subrotundata, apice lotundata, basi angustata, usque ad 2·7 cm. longa et 1·7 cm. lata, primo utrinque puberula, costa nervisque exceptis glabrescentia vel infra biutius leviter puberula, utrinque glandulis parvis hyalinis numerosis tecta, integra, et costa et nervis pagina utraque leviter prominentibus, nervis lateralibus utrinque circiter 4 sursum curvatis; petioli usque ad 6 mm. longi, leviter pubescentes, squamis hyalinis tecti. *Flores* solitarii vel 2 oppositi, apices versus ramulorum lateralium vel terminalium dispositi, pedicellis usque ad 7 mm. longis suffulti; bracteae foliis similes; bracteolae lineares, circiter 6 mm. longae. *Calycis* segmenta 5, oblongo-linearia, apice acuta, 2–2·3 cm. longa, 3–3·5 mm. lata, medio dorso carinata, nervis lateralibus numerosis fere horizontalibus parallelis instructa, fere ad apicem marginibus adglutinata et tubum formantia, extra pilis et glandulis tecta, parte libera densius ciliata; tubus 16–18 mm. longus, medio 8 mm. diametro. *Corollae* tubus cylindricus, 2 mm. longus, medio 4·5 mm. diametro, extra pilis drevibus et glandulis tectus, intus glaber; lobi 5, intus basi pilis parvis glanduligeris, extra glandulis hic illic instructi, ciliati; lobi postici 2, 15 mm. longi, 12 mm. lati, laterales 2, 17 mm. longi, 13 mm. lati; lobus anticus dentiformis, incrassatus, 2·5 mm. longus. *Stamina* 4, filamentis lateraliter per paria in membranam unilateraliter tubo adnatam connatis, omnino 33 mm. longis, parte libera 18 mm. longa inferne glanduloso-pilosa; antherae 5 mm. longae, dorso squamosae; pollinis granula typica, circiter 60 μ diametro. *Discus* annularis, postice filum 4 mm. longum includens. *Ovarium* cylindricum, 8 mm. altum, 1·5 mm. diametro, glandulis obtectum, typice biloculare, loculo quoque biovulato; stylus 4·5 cm. longus, leviter pubescens; stigma subbilobum, lobis valde inaequalibus.—*Ruellia paradoxa,* Lindau in Ann. Ist. Bot. Roma, vol. vi. p. 69.

Tropical Africa. Abyssinia: Boran, January 1909, *Dr. Drake-Brockman*, 187, 188, 189, 190, 191, 195.

The plant has been identified from Lindau's description of the type specimens collected by Riva at Dschacorsa, Somaliland. Although the striking morphological features are in agreement, there are several slight discrepancies. For instance, the style of the type is stated to be 27 mm. long, that of the Abyssinian plant is 45 mm. long. Again, the calyx-segments are described by Lindau as being 30 × 7 mm., those of Drake-Brockman's plant average 21 × 3·2 mm.

The small glands (which in the dried specimens appear as hyaline scales) found on all the parts with the exception of the old wood are in agreement with the general xerophytic habit of the plant. The calyx-segments (as in other species of the genus) are connected by a delicate membrane. When dried calyces are boiled the segments immediately separate to the very base. The reduction of the anticous petal to a thickened spur is remarkable. The filaments are united in a peculiar manner. One anticous and one lateral filament unite to form a comparatively broad membrane which is joined to the corolla tube all down one edge, the other edge being free. The second anticous stamen similarly unites with the second lateral one to form a second membrane unilaterally adnate to the corolla tube. This arrangement gives the appearance of a staminal tube split down one side and attached on the opposite side for its whole length to the corolla tube. The disc is represented by a narrow ring of tissue (hardly distinguishable from the receptacle and not 1·5 mm. high, as described by Lindau for the Somaliland specimens), from the inside of which on the posticous side arises a slender spur nearly half the length of the ovary. The backs of the anthers and the ovary are densely covered with glandular scales.—W. B. Turrill.

Fig. 1, portion of upper surface of leaf; 2, flower with the corolla removed; 3, corolla split open; 4, anther, back view and front view; 5, ovary; 6, ovary in longitudinal section. *All enlarged.*

O. Stapf anal. M.S del. et lith.

Tabula 2983.

WARPURIA CLANDESTINA, *Stapf.*

Acanthaceae. Tribus Barlerieae.

W. clandestina, *Stapf in Kew Bull.*, 1908, p. 261; *Beddome in Journ. Hort. Soc.*, vol. xxxiv., 1908, p. 96; *Benoist, Rech. s. l. struct. et la classific. des Acanthacées de la tribu des Barlériées*, p. 82. Species unica.

Planta ad 12 cm. alta, pilosa, caule brevi prostrato vel ascendente. *Folia* opposita, approximata, petiolata, oblonga vel oblongo-lanceolata, **utrinque acuta vel subacuta, 6–7 cm. longa, 2–3 cm. lata, obscure** repando-denticulata vel integra, supra cystolithis granoso-scaberula, in costa dense in nervis sparse in parenchymate sparsissime pilis albis adpressis aspersa, secundum costam vitta lata lobata nigro-viridi notata, caeterum laete viridia, subtus cinereo-viridia, ad costam et secundum margines dense ad nervos laxius in parenchymate sparse pilosa, nervis lateralibus utrinque circiter 7 obliquis; petiolus circiter 1 cm. longus, tomentosus. *Flores* in capitula pedunculo **5–8 cm. longo pilis declinatis densis canescente suffulta congesti.** *Capitulum* 1·5–2·5 cm. diametro, omnibus partibus albo-pilosis, **bracteis 2 linearibus herbaceis 1–1·2 cm. longis 1 mm. latis sub-**tentum, bracteis aliis similibus sed minoribus cum pedicellis mixtis; pedicelli inaequilongi, longiores 5 mm. attingentes; bracteolae involucrantes 4, exteriores 2 oblongae, subito in acumen latiusculum obtusum viride contractae, ad 7 mm. longae, albidae vel virescentes, venosae, interiores lineares vel lanceolatae, 5–6 mm. longae. *Calyx* 2·5-3 mm. longus, hyalinus, 5-partitus, segmentis 5 e basi triangulari subulatis apice pilo terminatis, posticis 3 fere ad basin distinctis anticis ad medium connatis. *Corolla* alba, 5-6 mm. longa, extra ad os pilosa: tubus subcylindricus, rectus; limbus imbricatus, minutus, clausus, vix 1 mm. altus, lobis rotundis, lateralibus exterioribus, antico intimo, superioribus alte connatis. *Stamina* 4, aequalia, paulo supra medium corollae tubum inserta; filamenta dissita; antherae albae, ultra 1 mm. longae, loculis aequalibus muticis; pollinis grana sphaerica, reticulato-foveolata. *Ovarium* ovoideo-oblongum, apice pilosulum, 2-loculare, loculis 2-ovulatis; stylus filiformis, magis minusve tortus; stigma 2-labiatum, labio supero majore. *Capsula* oblonga, tertia summa parte in rostrum solidum magis minusve contracta, 7 mm. longa, 2–5 mm. lata. *Semina* 4, lenticularia, sericea, 2 mm. diametro, retinaculo suffulta.

MADAGASCAR. This plant was raised at Kew in 1901 from seeds received from Mr. G. Warpur, who collected them in Madagascar. It has since flowered repeatedly at Kew and with the late Col. Beddome, but has always produced cleistogamic flowers only.

As only cleistogamic flowers of this plant are known, the systematic position of the genus might appear somewhat doubtful. My view, however, that it was allied to *Crabbea* has since been confirmed by M. Benoist, who also examined it anatomically. He considers that it forms, along with *Crabbea* and *Periblema*, a well-defined group in the tribe Barlerieae. *Periblema* is, like *Crabbea*, a monotypic genus of Madagascar, whilst *Crabbea* comprises about a dozen species occurring partly in Madagascar and partly in South Africa.—O. STAPF.

FIG. 1, diagram of flower with bracts; 2, flower with bracts; 3, calyx with pistil; 4, calyx cut open with pistil; 5, corolla cut open; 6, capsule; 7 seed. *Figures* 2–7 *enlarged*.

Tabula 2984.

STEMMATODAPHNE PERAKENSIS, *Gamble.*

Lauraceae. Tribus Cinnamomeae.

S. perakensis, *Gamble in Kew Bull.*, 1910, p. 227, *et in Journ. As. Soc. Bengal*, vol. lxxv. pars i. (1912) p. 111 (*Mat. Fl. Malay Penins.* vol. v. p. 111). Species unica.

Arbor 10–12 m. alta, trunco 30–45 cm. diametro, ramis patentibus, ramulis cortice griseo-albo tectis crassiusculis. *Gemmae* lanceolatae, fulvo-pubescentes. *Folia* oblanceolata vel obovata, acuminata, basi acuta, 12–30 cm. longa, 6–12 cm. lata, membranacea, glabra, exsiccando nigro-fulvescentia, costa crassa supra applanata subtus prominente, nervis utrinque 9–15 obliquis marginem versus curvatis arcuatim connexis, venis transversis laxis gracilibus; petiolus 1–3 cm. longus, glaber. *Flores* ♂ parvi, in paniculas laxas puberulas ad 10–12 cm. longas ad apices ramulorum ortas dispositi: pedunculi graciles, 3–7 cm. longi; **rami pauci, 1–1·5 cm. longi, umbellas 4–5-floras gerentes;** pedicelli 1·5–3 cm. longi, rubri, superne saepe incrassati. *Perianthium* in alabastro globosum; lobi subaequales, rotundati, 1 mm. longi, extra parce pilosuli; receptaculum lobis brevius, intus pubescens. *Stamina* fertilia 9, filamentis brevissimis pilosis, antheris ovatis vel ovato-triangularibus subaequalibus, 4-locellatis III ordinis extrorsis; staminodia 3, ovato-triangularia; glandulae nullae vel interdum (ex authore) minimae. *Ovarium* ovoideo-globosum. glabrum; stylus brevis; stigma minutum. *Fructus* baccatus, globosus, ad 6 cm. longus, basi perianthio persistente adpresso subtentus, pedunculo incrassato ad 9 cm. longo gestus. *Semen* globoso-ellipsoideum, 3·5 cm. longum, 3 cm. diametro; embryo 2·5 mm. longus, radicula late obconica.

Malay Peninsula. **Perak: at Thaiping,** *Wray*, **2658;** at Kwala Dipong, *Scortechini*, 1793; Ulu Bubong and Larut Hills, up to 300 m., *King's collector*, 3153, 6703, 10541. Malacca: at **Batang Malacca,** *Derry*, **203, 1157.**

This genus is nearest allied to *Phoebe*, but differs in the peculiar inflorescence, the small flowers succeeded by large subglobose fruits, the subsessile stamens and the almost complete absence of glands at their bases.—O. Stapf.

Fig. 1, diagram of the flower; 2, flower; 3, part of the perianth with stamens and staminodes; 4, stamens of the first and third orders; 5, stamen of the second order and staminode; 6, stamen of the third order, seen from without; 7, staminode, seen from without; 8, pistil; 9 longitudinal section of ovary, ***Figures 2–9 enlarged.***

M.S.del et lith

Tabula 2985.

KLAINEANTHUS GABONIAE, *Pierre.*

Euphorbiaceae. Tribus Crotoneae.

K. gaboniae, *Pierre ex Prain in Kew Bull.*, 1912, p. 106. Species unica.

Arbor 10–15-metralis, ramulis junioribus pubescentibus, adultis fere glabris. *Folia* petiolata, oblonga vel obovata, obtuse acuminata, margine integra, basi cuneata, 10–20 cm. longa, 4–9 cm. lata, subcoriacea, utrinque glabra; nervi laterales utrinsecus 8–12 prope marginem anastomosantes, subtus sat prominuli; petioli 3–5 cm. longi. *Flores* paniculati; paniculae axillares et terminales, maris 10–20 cm. feminei 8–12 cm. longae, rhachis ramulisque pubescens vel puberula; bracteae pubescentes, parvulae, maris flores 2–6 feminei flores solitarios subtendentes; pedicelli pubescentes, calyce breviores, articulati. *Calyx* ♂ campanulatus, 2 mm. longus, lobis 4–5 tubo aequilongis extra pubescentibus margine ciliatis imbricatis obtusis. *Stamina* 8 vel 10, 2-seriata, interiora longiora; filamenta basi incrassata, superne subulata, glabra, glandulis 4 vel 5 extrastaminalibus liberis circumcincta; glandulae ovatae, glabrae, staminibus exterioribus alternae, interioribus sepalisque oppositae. *Ovarii rudimentum* centrale, obscure trigonum, saepissime 3-partitum, nonnunquam 2-partitum, staminibus interioribus aequilongum. *Calyx* ♀ fere ad basin 5-sectus, raro 4-sectus, lobis obtusis imbricatis extra pubescentibus margine ciliatis. *Discus* cupuliformis, denticulatus, 4–5-lobus. *Staminodia* hypogyna, subulata, ad normam sepalis isomera, disco aequilonga vel longiora, nonnunquam obsoleta. *Ovarium* sessile, 3-gonum, 3-loculare, glabrum; ovula prope basin arillo membranaceo margine fimbriato e funiculo expanso dorsaliter lateraliterque obtecta; styli glabri 3, divaricati, patuli, ad trientem imum 2-partiti, ramis singulis iterum ad apices breviter obtuse 2-lobis. *Capsula* rubra, glabra, 3-sulcata, 2 cm. longa, 2 cm. lata, in coccos 2-valves cum strepitu dissiliens, epicarpio nitido tenue carnosulo, endocarpio lignoso; columella persistens, 3-gona, 1·5 cm. longa. *Semina* ovata, complanata, arillo carnoso luteo obtecta, 1 cm. longa, 8 mm. lata, 5 mm. crassa; testa crustacea, brunnea, nitida; albumen carnosum, fere 2-partitum; cotyledones foliaceae, late ovato-cordatae, basi 3-nerves, 8 mm. longae, 6 mm. latae; radicula minima.

Tropical Africa. Upper Guinea: Cameroons; Bipinde, *Zenker*, 1764, 1853, 3790, 4204. Lower Guinea: Gaboon; Libreville, *Klaine*, 277, 1352, 1941, 2015, 2461, 2474, 2510, 3200; Sibange, *Klaine*, 2576.

The genus *Klaineanthus* is most nearly allied to *Cunuria*, Baill., a Brazilian genus of somewhat doubtful affinity, which differs in having no disk-glands in the male flower and in having the leaves 2-glandular at the base. Bentham has placed *Cunuria* in the Jatropheae, and Pierre in his MSS. notes in Herb. Paris has suggested the same position for *Klaineanthus*. Müller, on the other hand, placed *Cunuria* near *Cheilosa*, which Bentham includes in the Acalypheae. Neither position appears at all satisfactory, and the most natural position for both genera is probably in the subtribe Gelonieae.—D. Prain.

Fig. 1, male flower, laid open, showing extrastaminal glands and androecium; 2, stamens of the inner series; 3, rudimentary ovary; 4, female perianth; 5, pistil with hypogynous disk and staminodes; 6, ovule; 6 (*bis*), fruits. *All enlarged, except the last, which is of natural size.*

Tabula 2986.

SPONDIANTHUS PREUSSII, *Engl.*

Euphorbiaceae. Tribus Phyllantheae.

S. Preussii, *Engl. in Engl. Bot. Jahrb.*, vol. xxxvi. p. 216, *et in Notizblatt Königl. Bot. Gart. Berlin*, 1911, No. 48, p. 241. *forma oblongifolia et var. glabra incl.*; *Hutchinson in Dyer. Fl. Trop. Afr.* vol. vi. p. 1044; affinis *S. ugandensi*, Hutchinson, sed inflorescentiis dense puberulis et ramis earundem multo brevioribus differt.

Arbor, ramulis teretibus glabris. *Folia* subverticillata, obovata vel elliptica, basi obtuse cuneata vel rotundata, apice obtusa vel rotundata, 9–17 cm. longa, 4–11·5 cm. lata, rigide chartacea vel tenuiter coriacea, utrinque glabra et opaca, nervis lateralibus utrinque 6–8 arcuatis marginem versus anastomosantibus supra distinctis subtus prominentibus, nervis tertiariis reticulatis utrinque distinctis; petioli 1–9 cm. longi, apice tumidi et rugosi, glabri; stipulae caducae. *Paniculae* ♂ ad apices ramulorum confertae, usque ad 15 cm. longae, axibus robustis sulcatis dense puberulis; rami spiciformes, circiter 1 cm. longi, basi ad 4 mm. nudi, unibracteati; bracteae late ovatae, apice rotundatae, 3 mm. latae, ciliatae et puberulae. *Sepala* 5, late ovata, obtusa, 1·5 mm. lata, marginem versus membranacea, breviter ciliata, extra parce et minute puberula. *Petala* parva, plus minusve elliptica vel obovata, apice 2–3-dentata. *Stamina* 5; antherarum loculi paralleli. *Disci* glandulae glabrae. *Ovarii* rudimentum columnare, apice complanatum, glabrum. *Flores* ♀ juniores non visi. *Paniculae* fructiferae usque ad 15 cm. longae, axibus angulatis sulcatis minute puberulis. *Capsula* subsessilis vel breviter pedicellata, ellipsoidea, 2 cm. longa, 1·7 cm. diametro, exocarpio crustaceo 1·5 mm. lato, endocarpio tenuiter corneo. *Semina* ambitu elliptica, circiter 1·3 cm. longa, 1 cm. lata, rubra, nitida.—*Megabaria Trillesii*, Pierre ex Hutchinson in Kew Bull., 1910, p. 57, et in Dyer, Fl. Trop. Afr., vol. vi. p. 627; De Wild., Etudes Fl. Bas- et Moy.-Congo, vol. ii. p. 284, nomen nudum; Th. et Hél. Dur., Syll. Flor. Congol., p. 497, nomen nudum.

Tropical Africa. Upper Guinea: Cameroons; Bipinde, *Zenker*, 1083, 2572, 2603, 2846, 3556; Barombe, *Preuss*, 426; *Staudt*, 778; Victoria, *Winkler*, 521; Duala, *Hückstadt*, 105; various localities.

Ledermann, 335, 1981, 2066, 2086, 2299, 2977. Lower Guinea: Gaboon; Bata, *Trilles*, 157. Spanish Guinea; Nschadum, *Tessmann*, 285; Alen, *Tessmann*, 138. Lower Congo; Ngombe-Mgama, *Mildbraed*, 2874. Angola; Malanje, *Marques*, 333. Belgian Congo; islands of Lulanga River, *Dewevre*, 856; Eala, *Laurent*, 2035; Bolombo, *Laurent*.

The genus *Spondianthus* was first dealt with by Pierre, but nothing relating to it was published by him. Specimens were distributed under the name of *Megabaria Trillesii*, Pierre, and assigned to the tribe Phyllantheae of *Euphorbiaceae*. Later Pierre's name was taken up by De Wildeman (l.c.), who, however, did not publish a description. The writer, whilst dealing with the genus for the *Flora of Tropical Africa*, published a Latin diagnosis in the *Kew Bulletin* (l.c.) and included a second closely allied species from Uganda (*M. ugandensis*). He was at that time unaware of *Spondianthus*, Engler, containing two species, which had been placed by its author in *Anacardiaceae*. Subsequently (in *Notizblatt Königl. Bot. Gart. Berlin*, 1911, No. 48, p. 240) Engler transferred *Spondianthus* to *Euphorbiaceae*, at the same time admitting its identity with specimens distributed by Pierre as *Megabaria Trillesii* and *M. obovata*. *M. Trillesii* will therefore have to be superseded by *Spondianthus Preussii*, Engler, which is identical, but *M. obovata* represents quite a distinct genus, and was described and figured as such by the writer at tab. 2929 of this work under the name *Protomegabaria*.

In *Spondianthus* in a restricted sense (i.e. *S. Preussii* and *S. ugandensis*) the leaves are subverticillate, the inflorescence paniculate, there are petals in the male flowers, and the capsule is loculicidal; in *Protomegabaria* the leaves are scattered, the inflorescence racemose, there are no petals, and the capsule is septicidal.—J. Hutchinson.

Figs. 1 and 2, male flowers; 3, stamens, glands, and rudimentary pistil of same; 4, young fruit; 5, longitudinal section of same; 6, fruits. *All enlarged except* 6.

Tabula 2987.

NECEPSIA AFZELII, *Prain*.

Euphorbiaceae. Tribus Crotoneae.

N. Afzelii, *Prain in Kew Bull.*, 1910, p. 343. Species unica.

Arbor, innovationibus parce puberulis non glabrescentibus. *Folia* breviter petiolata, oblongo-ovata vel ovata, acute acuminata vel acuta apice mucronulata, minute remoteque dentata, basi late cuneata ibique subtus prope apicem petioli 2-glandulosa, 10-25 cm. longa, 6·5–9 cm. lata, utrinque glabra, siccitate brunnescentia ; nervi laterales utrinsecus 7–10 adscendentes, supra subtusque nervo mediano prominuli ; nervuli subparalleli graciles, subtus prominuli ; petiolus 1–2·5 cm. longus, supra canaliculatus, glaber ; stipulae lanceolatae, rigidae, subscariosae, persistentes, 6 mm. longae. *Spicae* solitariae, axillares, 10–25 cm. longae, nunc androgynae, nunc 1-sexuales ; rhachis angulata, rigida, fusco-puberula ; bracteae glomeratae, dense imbricatae, ovatae, acutae, rigidae, striatae, subscariosae, pubescentes, 2–4 mm. longae ; glomeruli flores masculos plures femineo singulo centrali addito, nunc flores masculos plures tantum, nunc florem singulum femineum includentes. ♂ *Alabastra* ovata, demum ovoideo-globosa subacuta. *Calycis* segmenta 4, valvata, extra puberula ; pedicelli puberuli, 2 mm. longi. *Petala* 0. *Stamina* circiter 30 ; filamenta libera, receptaculo subgloboso affixa, glandulis oblongis dense pubescentibus intermixta ; antherae introrsae, 2-loculares ; loculi ovati, connectivo latiusculo breviter producto parum sejuncti. ♀ *Alabastra* globosa triangularia ovatave, acuta vel obtusa, puberula, imbricata. *Discus* crassus, explanatus, margine crenulato glaber, supra ubi ab ovario liber dense setosus. *Ovarium* 3-loculare, dense fusco-setosum, loculis 1-ovulatis ; styli basi minopere connati, subreflexi, 2-fidi, extra fusco-pubescentes, intus versus basin pubescentes, superne stigmate fimbriato-papillosi.

Tropical Africa. Upper Guinea : Sierra Leone, *Afzelius*, 29. Cameroons ; Bipinde, *Zenker*, 3040.

The genus *Necepsia* is perhaps most closely allied to the genus *Argomuellera*, Pax, but is readily distinguished therefrom by its 2-partite styles and its strongly developed hypogynous disk. As regards its styles it comes nearer to the genus *Neoboutonia*, Müll. Arg., but is readily distinguished by the presence of interstaminal glands in the male flower, the much more prominent female disk and the penninerved in place of palminerved leaves.—D. Prain.

Fig. 1, male flower ; 2, vertical section of the same ; 3, interstaminal glands ; 4, stamens ; 5, female flower ; 6, a single female perianth-segment ; 7, pistil ; 8, transverse section of ovary. *All enlarged.*

M.S del — hfr

Tabula 2988.

DISCOGLYPREMNA CALONEURA, *Prain.*

Euphorbiaceae. Tribe Crotoneae.

D. caloneura, *Prain in Kew Bull.*, 1912, p. 317. Species unica.

Arbor 15–20-metralis, ramulis glabris vel glabrescentibus. *Folia* petiolata, alterna, firmula, oblonga vel rotundato-oblonga, saepe breviter caudato-acuminata, basi cuneata vel subrotundata, integra vel obscure dentata, 7–10 cm. longa, 5–6 cm. lata, utrinque glabra vel subtus secus nervos parce puberula, in angulis intercostalibus subtus foveolata, basi 3-nervia ibique supra minute 2-glandulosa glandulis puberulis; petiolus **4·5 cm. longus, parce puberulus, supra canaliculatus.** *Flores* dioici, subspicati, spicis in paniculas terminales 15–20 cm. longas, 7–10 latas dispositis; rhachides puberulae. ♂ *Calyx* globosus, extra puberulus, **dein valvatim 5-partitus, 1–1·5 mm. latus.** *Stamina* 7–8, **filamentis** gracilibus apice subulatis longe exsertis, glabris, glandulis receptacularibus plus minusve inaequalibus apice hirsutis consociatis; antherae prope apicem dorsifixae, loculis distinctis 2-locellatis a connectivo prominente conico pendulis, locellis inaequalibus introrsis minoribus. ♀ *Calyx* extra puberulus, 5-sectus, segmentis valvatis reflexis. *Ovarium* 3-loculare, hirsutum; styli distincti, indivisi, recurvo-patentes, intus fimbriati; ovula in quoque loculo solitaria. *Discus hypogynus* distinctus, e squamis 6–8 crassis latis contiguis margine hirsutis compositus. *Capsula* **3-dyma, 6–7 mm. lata, in coccos 2-valves dissiliens, parce** pubescens. *Semina* ovoidea, arillo pulposo involuta; testa dura, crassa, nigra, nitidula, foveolata.—*Alchornea caloneura*, Pax in Engl. **Bot. Jahrb. vol. xliii. p. 81.**

Tropical Africa. **Upper Guinea: Ivory Coast;** Anyama on the Potou Lagoon. *Chevalier*, 20019. Gold Coast: Ancobra River, *Johnson*, 919; Esubompang, *Chipp*, 100. Southern Nigeria; 70 miles east of Lagos, *Lamborn*, 123. Cameroons; Bipinde at Mimfiaberg, *Zenker*, 2113, 2643, 3322. Lower Guinea: Spanish Guinea; Fang, *Tessmann*, 97; Bebao, *Tessmann*, 702.

The genus *Discoglypremna* is perhaps most nearly allied to the genus *Mallotus*, Lour., but is readily distinguished by the 4-celled anthers, the receptacular glands associated with the male stamens, the anthers dorsifixed near the apex as in the genus *Podadenia*, Thw., and the well-marked hypogynous disk.—**D.** Prain.

Fig. 1, male flower; 2, a stamen with corresponding interstaminal gland; 3, a stamen, showing attachment of anthers and connective; 4, female flower; 5, vertical section of an ovarian chamber; 6 seed enveloped in its arillus **7, section of a seed.** ***All enlarged.***

Tabula 2989.

ROLFEA ELATA, *Zahlbr.*

Orchidaceae. Tribe Neottieae.

Rolfea, *Zahlbr. in Journ. Bot.*, 1898, p. 493. Genus anomalum, a *Sertifera*, Lindl., foliis longe petiolatis, scapis racemosis, bracteis amplis conduplicato-concavis, floribus majoribus elongatis et segmentis subconniventibus differt.

Perianthium connivens. *Sepala et petala* subaequalia, lanceolata. *Labellum* petalis multo latius, obsolete trilobum, basi columnae facie adnatum, marginibus eundem amplectens; disci nervi vix incrassati, parce villosi. *Columna* clavata, paullo arcuata, basi labello adnata, apice biauriculata; stigma ad basin rostelli lati transverse concavum; clinandrium breve. *Anthera* incumbens, apiculata, bilocularis; pollinia obovoidea, pulverea. *Capsula* elongata, teres, columna persistente coronata.—Herba *elata, terrestris, habitu Neuwiediae.* Flores *mediocres, in racemos axillares dispositi.* Bracteae *amplae, conduplicato-concavae.*

R. elata, *Zahlbr. in Journ. Bot.*, 1898, p. 493. Species unica.

Herba terrestris. *Folia* longe petiolata; limbus lanceolatus vel elliptico-lanceolatus, acuminatus, plicatus, 30–56 cm. longus, 5–10 cm. latus, basi vaginatus. *Scapi* laterales, 15–20 cm. longi; rhachis velutina. *Bracteae* amplae, ovatae vel ovato-oblongae, acutae vel mucronatae, conduplicato-concavae, venosae, scaberulae, 1·5–2·3 cm. longae. *Flores* mediocres, flavi. *Pedicelli* 1·2 cm. longi. *Sepala* oblongo-lanceolata, apiculata vel subobtusa, 2·4–2·6 cm. longa, 6 mm. lata. *Petala* sepalis subaequalia vel paullo angustiora. *Labellum* obscure trilobum, 2·5 cm. longum, expansum, 1–1·2 cm. latum, basi angustum. *Columna* 1·4 cm. longa. *Capsulae* oblongae, 3·5–4·5 cm. longae.—*Jenmania elata,* Rolfe in Kew Bull., 1898, p. 198.

Tropical America. Trinidad: without precise locality, *Prestoe*; Aripo, *Lunt*, 6377. British Guiana: Pomeroon River, *Jenman*, 1640; Mazaruni River, *Jenman*, 1685; Demerara River, at the Great Falls, *Jenman*, 6659, 6904; and without precise locality, *Im Thurn*, 111.

The position of this anomalous genus is apparently in the subtribe Vanilleae, as defined by Bentham, but it differs from all its allies in the long conduplicate leaf-petioles, and from most of them in the lateral inflorescence. This character is, however, seen in *Sertifera*, Lindl., and in some species of *Vanilla*, Swartz. In floral structure it bears a general resemblance to the latter genus, the base of the lip being adnate to the front of the column for a considerable distance, though the side lobes are not adnate to its margin so as to form a tube. The pollinia are in bad condition, but so far as can be seen they resemble *Vanilla*, as do the anther, stigma and rostellum. The habit, however, is totally different. We have not seen an entire plant, but from the numerous dried specimens it is evident that it produces an erect stem, with long-petioled elliptic-lanceolate leaves, and that the racemes are axillary, and sometimes produced after the lower leaves have perished. The earliest evidence of the existence of such a plant is found in a few flowers on a Herbarium sheet at Kew which were originally preserved in spirit, also a sketch of the column. This plant is said to have been sent from Trinidad by Prestoe, and flowered at Kew in September 1870. A sketch is said to have been sent to Reichenbach, who returned the name *Chloidia flava*, Reichb. f., from which, however, it is quite distinct. The plant appears to have died and no specimen was preserved. Specimens of the same thing were afterwards sent from British Guiana by Jenman and the species was described under the name of *Jenmania elata*, Rolfe. Dr. Zahlbrüchner then pointed out that the generic name had previously been given to a lichen, and changed the name to *Rolfea elata*. It has since been collected in Guiana by Im Thurn and in Trinidad by Lunt, the specimen of the former bearing a seed-pod much resembling that of *Vanilla palmarum*, Lindl. Lunt describes the lip as yellow with a white throat, and the other parts of the flower as bright red.—R. A. Rolfe.

Fig. 1, column and base of lip, seen from side ; 2, the same seen from front ; 3, anther-case ; 4, pollinia ; 5, capsule. *All enlarged except* 5, *which is of natural size.*

Tabula 2990.

HIBISCUS WATSONI, *W. W. Smith.*

Malvaceae. Tribus Hibisceae.

H. Watsoni, *W. W. Smith in Kew Bull.*, 1912, p. 198; species distinctissima floribus in spicam validam multibracteatam congestis.

Frutex 1–1·5 m. altus, erectus, vix ramosus; caulis inferne lignosus, superne fistulosus, pallidus, spiculis aureis stellatim dispositis hispidissimus. *Folia* suborbicularia, repando-lobata, apice lobisque acuta, basi cordata sinu angusto usque ad 5 cm. longo, utrinque pilis parvis stellatis asperata, nervis spiculiferis, margine crebre denticulata denticulis alternis longioribus; nervi primarii 5–7, supra prominuli, subtus prominentes; rete venularum densum, subtus valde prominens; petiolus crassus. *Spica* terminalis, multiflora, densissime bracteata; bracteae lineares, acuminatae, 6–7 cm. longae, subadpresse hispidulae. *Involucrum* campanulatum, 10–13-laciniatum, dense pubescens, sparse adpresse hispidulum; tubus paullo ultra 1 cm. longus; lobi subulati, inaequales, circiter 2 cm. longi. *Calyx* tubulosus, firmus, dense asperule pubescens, inaequaliter 5-lobus, 3–4 cm. longus, basi intus dense grosse sericeus; lobi lanceolati, 1–1·5 cm. longi, trinervii, nervis lateralibus loborum adjacentium versus basin tubi confluentibus. *Petala* flava, inferne tubo staminео circiter 6 mm. adnata, parte libera cuneato-obovata, rotundata vel emarginata, 3·5–4 cm. longa, circiter 1·3 cm. lata, basi longiuscule ciliata. *Columna staminea* 4–5 cm. longa; filamentella numerosa, brevia. *Ovarium* dense villosum; styli rami 4–5 mm. longi, stigmatibus peltatis. *Capsula* ovoidea, acuminata, 3 cm. longa, 1·5 cm. diametro, dense sericeo-villosa. *Semina* in quoque loculo circiter 3–4, molliter pilosa. *Cotyledones* ovatae, rotundatae, basi cordatae.

Indo-China. Upper Burma: Southern Shan States; Taunggyi, about 1000 m., *H. W. A. Watson*, 2061; near Pinlaung, 1200-1500 m., on rocky soil, Moung Thaw Forest, *W. A. Robertson*, 94.

The dense multibracteate spike serves to distinguish *H. Watsoni* from all the other species. Its affinities are doubtful. *H. cancellatus*, Roxb., has been suggested as an ally, but this differs greatly in the indumentum, the texture of the leaves and the nature of the capsule. *H. macrophyllus*, Roxb., resembles *H. Watsoni* as regards the above characters, and appears to be more closely related to it. The involucre, however, is very different.

According to Robertson, the stem of *H. Watsoni* is used by the Shans for making spear shafts.—T. A. Sprague.

Fig. 1, flower; 2, longitudinal section of flower, the corolla cut off; 3, style-arms; 4, seed; 5, embryo. 1 *and* 2 *of natural size*, 3–5 *enlarged*.

M.S. del et lith

Tabula 2991.

GARDENIA SOKOTENSIS, *Hutchinson*.

Rubiaceae. Tribus Gardenieae.

G. (§ **Rothmannia**) **sokotensis,** *Hutchinson in Kew Bull.*, 1912. p. 99 ; affinis *G. succosae*, Baker, sed ramis puberulis vix resinosis, foliis minus coriaceis venis laxis, floribus longe pedicellatis differt.

Frutex parvus ; rami teretes, circiter 3 mm. diametro, dense puberuli vel subtomentelli, nodis plerumque 1–2 cm. distantibus. *Folia* subsessilia, elliptica vel oblongo-elliptica, utrinque rotundata, basi interdum subinaequalia, rarius paullo cuneata, 5–8 cm. longa, 2–5 cm. lata, integra, firme chartacea, utrinque minute puberula, nervis lateralibus utrinque 10–13 supra paullo subtus valde prominentibus, venis laxis subinconspicuis ; stipulae ovato-triangulares, subacutae, 6–7 mm. longae, basi 5 mm. latae, plus minusve membranaceae, extra puberulae. *Flores* ad apices ramulorum brevium solitarii, pedicellati ; pedicelli 1–1·5 cm. longi, graciles, viscide puberuli. *Receptaculum* oblongo-obconicum, 2–2·5 mm. longum, puberulum. *Calycis* tubus campanulatus, 3 mm. longus, tenuis, intra multiglandulosus, extra leviter viscidus, fere glaber ; lobi lineares, obtusi, dorso carinati, subaequales, 7–8 mm. longi, glabri, virides. *Corolla* alba ? ; tubus infundibuliformis, 1·2 cm. longus, basi 1·75 mm., apice vix 1 cm. diametro, utrinque minutissime puberulus ; lobi 5, suborbiculares, truncati, 0·5 cm. longi et lati. *Antherae* infra medium affixae, lineares, 7 mm. longae, inclusae. *Ovarium* ob placentas centro sese attingentes et cohaerentes spurie 2-loculare ; stylus 7 mm. longus, glaber, profunde bilobus, lobis 6 mm. longis complanatis. *Fructus* ellipsoideus, 1 cm. longus, 0·5 cm. diametro, minute puberulus ; pericarpium membranaceum. *Semina* ∞, punctulata.

Tropical Africa. Northern Nigeria : Sokoto, a low shrub on rocky hills, *Dalziel*, 402.

The most interesting feature regarding *Gardenia sokotensis* is its close affinity with *G. succosa*, Baker, a species so far known only to occur in Madagascar. It shows no distinct relationship with any other African species known to us.

The genera *Randia* and *Gardenia*, as at present defined, are separated merely by the position of the placentas ; in the former the ovary is two-

or more-celled with axile placentas, whilst in the latter the placentation is parietal. In many species of *Gardenia*, however, we have found that the placentas towards the base of the ovary are frequently coherent, and a transverse section at this point would be the same as one across the ovary of a typical species of *Randia*. It has long been our opinion that these two genera should be entirely recast, the distinguishing characters being taken from the shape of the corolla tube and the nature of the stipules. These characters, associated with the number of the ovarian cells and the position of the placentas, would probably result in the segregation of a few (4–6) smaller and fairly distinct genera.

The proper position of the plant here figured, in spite of the axile placentation, seems to be in the section *Rothmannia*, which was described as a genus by Thunberg.—J. Hutchinson.

Fig. 1, calyx and pistil; 2, corolla laid open; 3, transverse section of ovary; 4, fruit; 5 and 6, seed. *All enlarged except* 5.

Tabula 2992.

GENTIANA STYLOPHORA, *C. B. Clarke.*

Gentianaceae. Tribus Swertieae.

G. stylophora, *C. B. Clarke in Hook. f. Fl. Brit. Ind.*, vol. iv. p. 118; *Forbes et Hemsl. in Journ. Linn. Soc.*, vol. xxvi. p. 136; species *G. venosae*, Hemsl., proxime affinis, sed pedunculis tenuioribus, calyce gamosepalo et corolla late infundibuliformi facile distinguenda.

Herba robusta, omnino glaberrima, radicibus crassis carnosis. *Caules* 1-2 m. alti, ad 1·5 cm. diametro, fistulosi, basi squamis magnis vaginantibus instructi. *Folia* basalia plus minusve petiolata, oblongo-elliptica, ad 3 dm. longa et 1 dm. lata; caulina sessilia, amplexicaulia, ovato-elliptica vel ovato-oblonga, apice plus minusve acuminata, rarius rotunda, integerrima, 8–20 cm. longa, 5–7·5 cm. lata, 5–7-nervia superiora gradatim minora. *Pedunculi* terminales et ex axillis foliorum superiorum orti, 1–3 dm. longi, 1- vel 3-flori. *Bracteae* lanceolatae, 4–6 cm. longae. *Pedicelli* terminales, ad 4 cm. longi; laterales multo breviores, bracteolis duabus parvis lanceolato-linearibus instructi. *Calyx* campanulatus, 2–2·5 cm. longus, valide 2-costatus, usque ad medium subaequaliter 5-lobatus; lobi triangulari-ovati, acuti, basi 5–11 mm. lati. *Corolla* lutea, conspicue reticulato-venosa, latissime infundibuliformis, 5–6 cm. longa, 6–7 cm. lata, intra nuda; lobi 5, late ovati, acuti, circiter 4 cm. longi et 2 cm. lati. *Stamina* e tubo paulum exserta; filamenta 2–2·5 cm. longa, praesertim basi dilatata; antherae oblongae, 12–13 mm. longae. *Ovarium* elongato-ovoideum, cum stylo et stigmate 3·7–4 cm. longum, uniloculare, ovulis parieti ipsi fere ubique affixis; stigmatis lobi suborbiculares, 3–4 mm. diametro. *Capsula* fusiformi-ovoidea vel ovoidea, rostrata, 4–5 cm. longa. *Semina* oblonga, compressa, 1·5 mm. longa, testa laxa valde rugosa.

Eastern Himalaya. Sikkim: Chola and Kankola, 3300–4000 m., *Hooker*; Jongri, 3900 m., *Clarke*. Tibet: Yatung, 27° 51′ N., 88° 35′ E., *Hobson*. China. Yunnan: Tsangshan, above Tali in mountain woods at 4000 m., *Delavay* (ex Franchet); Tsekou, *Monbeig*.

The receipt of some good specimens of this handsome and distinct species, which were included in the collection made by Père T. Monbeig

and presented by Mr. A. K. Bulley, affords an opportunity for figuring it and at the same time enables us to amplify in some respects the original description, which was based on unsatisfactory material. It is now possible to state with certainty that the corolla is naked inside, not fimbriate in the throat.

The only species nearly allied to *G. stylophora*, which still stands alone in the section *Stylophora* created for it by Mr. Clarke, appears to be *G. venosa*, Hemsl., from Szechuen, China, for which Mr. Hemsley established the section *Megacodon*. They are, however, easily distinguishable, the latter having a polysepalous calyx and a broadly campanulate corolla.—S. A. Skan.

Fig. 1, anthers with portions of filaments; 2, pistil. *Both enlarged.*

Tabula 2993.

CHILOCARPUS ANGUINEUS, *Stapf*.

Apocynaceae. Tribus Plumerioideae.

C. anguineus, *Stapf* (sp. nov.) ; inter omnes species generis fructu miro cylindrico anguiformi distinctissima.

Frutex alte scandens, glaberrimus. *Folia* oblongo-lanceolata, utrinque subacuminata, apice obtusiuscula, 7–9 cm. longa, 2–3 cm. lata, coriacea, concoloria, costa supra applanata, subtus prominula, nervis lateralibus patulis tenuibus 2–3 mm. distantibus, nervo marginali tenuissimo continuo; petiolus 1–1·5 cm. longus. *Flores* parvuli, in cymas multifloras paniculatas congesti ; paniculae pedunculo gracili e foliorum summorum axillis ortae ; pedunculus 3–4 cm. longus ; rami pauci, 4–8 mm. longi ; ramuli ultimi ordinis brevissimi ; pedicelli vix ulli ; bracteae minutae, ovatae, subacutae, minutissime ciliolatae. *Sepala* ovata, obtusa, 0·5–0·6 mm. longa. *Corolla* 2·5 mm. longa, ut videtur alba, tubo cylindrico, lobis oblique ovatis in alabastro inflexis. *Stamina* paulo supra basin inserta ; antherae basi breviter bilobae, apice apiculatae. *Ovarium* ovoideum, uniloculare, stylo brevi, stigmate punctiformi ; ovula 2-seriata, numerosa. *Fructus* baccatus, cylindricus, anguiformis, flexuosus, inter semina hinc inde magis minusve constrictus, 18–30 cm. longus, 1·-1·5 cm. crassus, rufus vel fuscescens ; pericarpium carnoso-coriaceum, 2–3 mm. crassum, inter semina intus projectum, septa transversa plerumque imperfecta formans. *Semina* oblongo-ellipsoidea, circiter 8 mm. longa, 6–7 mm. diametro, dorso late concava, sulco arillo suberoso transverse rugoso repleto ; endospermum osseum. *Embryo* quam endospermum paulo brevior ; cotyledones tenues, late elliptici, radicula duplo longiores.

Borneo. Sarawak; Mt. Bongo, *Haviland*, 2060.

The structure of the flower and the seed is that of a typical *Chilocarpus* ; but the shape of the fruit is unique in the genus.—O. Stapf.

Fig. 1, a cyme with young flowers ; 2, part of a calyx and pistil ; 3, young corolla, laid open to show the inflexed tips of the lobes ; 4, cross section of ovary ; 5, fruit ; 6, part of a fruit, cut longitudinally, with some of the seeds removed ; 7, seed seen from the back with aril ; 8, seed in cross section ; 9, same in median section ; 10, same in tangential section to show the embryo. *Figures* 1–4 *and* 7–10 *enlarged*, 5 *somewhat reduced*, 6 *of natural size*.

Tabula 2994.

MICROSTEPHANUS CERNUUS, *N. E. Brown.*

Asclepiadaceae. Tribus Cynancheae.

M. cernuus, *N. E. Brown in Kew Bull.*, 1895, p. 249, *et in Dyer, Fl. Trop. Afr.*, vol. iv. sect. i. p. 288. Species unica.

Fruticulus volubilis vel decumbens. *Folia* opposita, petiolata, glabra vel puberula; petioli 4–8 mm. longi; laminae 0·6–4·5 cm. longae, 3–16 mm. latae, oblongae, ovatae, ovato-lanceolatae vel ellipticae, obtusae vel acutae, minute apiculatae, basi rotundatae vel cuneatae. *Cymae* pedunculatae, umbelliformes, paucifloraе, ad nodos laterales, glabrae; pedunculi 2–4 mm. longi; pedicelli 3–5 mm. longi, graciles. *Calyx* 5-partitus, glaber; sepala 1 mm. longa, ovata, acuta, glabra. *Corolla* parva, alba, glabra; tubus campanulatus, 2 mm. longus; lobi 3–4 mm. longi, attenuato-lineares, torti, apice oblique subacuti vel obtusi. *Coronae* lobi 5, minuti, cum antheris alterni. *Columna staminum* 5-sulcata; antherae erectae, oblongae, membranaceo-appendiculatae, dorso valde convexae, basi sulcatae. *Pollinia* in quoque loculo solitaria, pendula. *Stylus* ultra antheras longe productus, apice bifidus. *Folliculus* solitarius, 5 cm. longus, lanceolatus, rostrato-acuminatus, glaber. *Semina* ovata, marginata, dorso laevigata, ventre papillata, brunnea, comosa.—*Astephanus cernuus* et *A. orabus*. Decne in Ann. Sc. Nat. ser. 2, vol. ix. p. 342, et in DC. Prodr. vol. viii. p. 507; K. Schum. in Engl. Pfl. Ost.-Afr., C. p. 321. *A. arenarius*, Decne in DC. Prodr. vol. viii. p. 507. *A. recurvatus*, Klotzsch in Peters, Reise Mossamb., Bot., p. 274; K. Schum. in Engl. Pfl. Ost.-Afr., C, p. 321, et in Engl. & Prantl, Pflanzenfam. vol. iv. pt. ii. p. 224. *Periploca ovata*, Poir. ex Decne in DC. Prodr. vol. viii. p. 508.

East Tropical Africa. British East Africa: Mombasa, *Hildebrandt*, 1166, 1978; Shimoni, south of Mombasa, *Whyte*. Zanzibar, *Kirk*, *Lyne*. German East Africa: Usambara: Muoa, *Holst*, 3037. Portuguese East Africa: Mozambique Island, on coral rocks, *Scott*; Cabaceira Grande, *Kirk*. Madagascar: various localities, *Commerson*, *Baron*, 6192, *Scott Elliot*, 3011, *Grevé*.

A monotypic genus allied to *Astephanus*, differing from it by the presence of a small but distinct corona and by the anther-wings turning inwards, whereas in *Astephanus* and most other Asclepiads they are directed outwards from the centre of the flower.—N. E. Brown.

Fig. 1, a flower; 2, a flower with the corolla turned inside out, to show the corona; 3, apex of a lobe of the corolla; 4, stamens and corona; 5, an anther; 6, a transverse section of an anther; 7, pollen-masses; 8, a fruit; 9, a seed; 10 and 11, back and front views of a seed without its crown of hairs. *All except* 8 *and* 9 *enlarged.*

Tabula 2995.

Fig. A. 1–3. **EMPLECTANTHUS GERRARDI,** *N. E. Brown.*
Fig. B, 4–9. **EMPLECTANTHUS CORDATUS,** *N. E. Brown.*

Asclepiadaceae. Tribus Marsdenieae.

Emplectanthus, *N. E. Brown in Dyer, Fl. Cap.*, vol. iv. sect. i. p. 771 ; genus *Tylophorae*, R. Br., affine, sed corona biseriata distinctissimum.

Calyx 5-partitus. *Corolla* parva, gamopetala, 5-loba; tubus cupularis; lobi lanceolati, valvati. *Corona* duplex, columnae staminum affixa ; exterior 5-loba, lobis parvis sacculiformibus cum antheris alternantibus ; interior 5-loba, lobis simplicibus basi staminibus adnatis et dorsaliter coronae exteriori conjunctis, superne liberis. *Columna staminea* basi corollae affixa ; antherae erectae vel incurvae, oblongae, exappendiculatae. *Pollinia* in quoque loculo solitaria, erecta, minuta, infra apicem pellucido-marginata. *Folliculi* lineari-teretes, apice et basi angustati.—Herbae *volubiles* Tylophorae *persimiles*. Caulis *linea singula pilorum instructus.* Folia *opposita, longe petiolata, cordata, herbacea.* Pedunculi *ad nodos laterales, florum fasciculis* 1–2 *instructi.* Flores *parvi.*

Species 2, in Africa australi indigena.

E. Gerrardi, *N. E. Brown in Dyer, Fl. Cap.*, vol. iv. sect. i. p. 772.

Herba volubilis. *Foliorum* petioli 3·8 cm. longi : laminae ad 7 cm. longae et 4·5 cm. latae, cordatae, acuminatae, supra tenuiter adpresse pubescentes, subtus glabrae. *Pedunculi* brevissimi, 4-8 mm. longi, pauci- vel multiflori. *Pedicelli* 1·4–2 cm. longi, graciles, glabri. *Sepala* 2·5 mm. longa, lanceolata, attenuata, glabra. *Corolla* purpurascens ; tubus 2 mm. longus, 4 mm. diametro, cupularis, ore leviter contractus et pilis tenuissimis sparse barbatus ; lobi 6 mm. longi, 3 mm. lati, lanceolati, acuti, glabri. *Coronae* exterioris lobi 0·5 mm. longi, profunde concavi, apice reflexi, bifidi, intus carinati, brunneo-purpurei ; interioris lobi 1 mm. longi, antheras excedentes, lineari-spatulati vel lineari-lanceolati, obtusi, conniventes, erecti, brunneo-purpurei.

Zululand. Qudeni, *Gerrard*, 2167.

E. cordatus, *N. E. Brown in Dyer, Fl. Cap.*, vol. iv. sect. i. p. 772.

Herba volubilis, gracilis. *Foliorum* petioli 2·5–7·5 cm. longi, laminae

2·5–9·5 cm. longae, 2·2–5 cm. latae, ovatae, acuminatae, basi profunde cordatae, supra pilis minutis sparse conspersae, subtus glabrae. *Pedunculi* 1·8–7 cm. longi, florum fasciculis 1–2 instructi; fasciculi 4–6-flori. *Pedicelli* 2–3 cm. longi, graciles, glabri. *Sepala* 1·5 mm. longa, lanceolata, acuminata, glabra. *Corolla* purpureo-brunnea; tubus 1·5 mm. longus, 3·5 mm. diametro, cupularis, ore leviter contractus et pilis tenuissimis sparse barbatus; lobi 3 mm. longi, basi 2 mm. lati, deltoideo-ovati, acuti, utrinque glabri. *Coronae* exterioris lobi sacculiformes, breviter bifidi vel emarginati, atropurpurei; interioris lobi 0·5 mm. longi, lineari-oblongi, obtusi, antheras excedentes, apice incurvi, atropurpurei.

NATAL. Tugela, *Gerrard*, 1803; *Wylie in Herb. Wood*, 11397.

This genus is allied to *Tylophora* and closely resembles it in general appearance, but is at once distinguished by the presence of a double corona.—N. E. BROWN.

FIG. A, **E. Gerrardi**: 1, a flower; 2, part of a flower, showing corona; 3, pollen-masses. *All enlarged.*

FIG. B, **E. cordatus**: 4, portion of the stem, showing a line of hairs; 5, a bud; 6, a flower; 7, corona; 8, pollen-masses; 9, fruit. *All except 9 enlarged.*

Tabula 2996.

POGOSTEMON ROGERSII, *N. E. Brown.*

LABIATAE. Tribus SATUREINEAE.

P. Rogersii, *N. E. Brown in Kew Bull.*, 1909, p. 379 ; species ab omnibus foliis parvis deflexis et patria distinctissima.

Herba erecta, 45 cm. vel ultra alta, ramosa, corolla excepta ubique dense villoso-tomentosa, ramis adscendentibus. *Folia* deflexa, 1·5-2·5 cm. longa, 5-10 mm. lata, ovato-lanceolata vel oblongo-lanceolata, obtusa, basi rotundata, petiolo 2-3 mm. longo. *Spicae* terminales, 2-4 cm. longae, densae. *Bracteolae* filiformes, 3-5 mm. longae. *Calyx* 3 mm. longus, campanulatus, 5-nervius, aequaliter 5-dentatus, dentibus deltoideis acutis. *Corolla* exserta, roseo-purpurea : tubus 3–4 mm. longus, cylindricus, glaber ; limbus subaequaliter 4-lobus, lobis 3 posticis ovatis obtusis dorso parce pubescentibus in labium posticum 2 mm. longum approximatis, lobo antico 1·5 mm. longo ovato acuto integro. *Stamina* 4, aequalia, longe exserta, 5-6 mm. longa ; filamenta ad medium longe barbata ; antherae 1-loculares. *Discus* breviter columnaris, apice truncatus. *Stylus* apice bifidus.

RHODESIA. Dam near the railway, about 2114 miles from Cape Town, growing in water, 1400 m. alt., *Rogers*, 8314.

This is the first species recorded from Africa. The Kew Herbarium contains fragments of a second that was collected near the Cunene River in Angola by Sir Harry Johnston, but the material is scarcely sufficient for descriptive purposes.—N. E. BROWN.

FIG. 1, a flower ; 2, calyx laid open, showing ovary ; 3, corolla laid open ; 4, anther, back and front view ; 5, hairs from a stamen. *All enlarged.*

M.S. del. et lith

Tabula 2997.

BOSWELLIA ODORATA, *Hutchinson.*

Burseraceae. Tribus Bursereae.

B. odorata, *Hutchinson in Kew Bull.*, 1910, p. 138; affinis *B. papyriferae*, Hochst. et *B. Dalzielii*, Hutchinson, ab illa foliolis serratis longe acuminatis glabris, ab hac inflorescentiis paniculatis dense pilosis differt.

Arbor; ramuli crassi, cortice pallide fusco deciduo glabro. *Folia* imparipinnata, 6–9-juga; rhachis 30–40 cm. longa, subteres, sulcata, parcissime pilosa, 1·5–3 mm. diametro; foliola plerumque subalterna vel superiora opposita, infima lanceolata, minora, intermedia et superiora elongato- vel lineari-lanceolata, apice sensim longe acuminata, basi cuneata vel subrotundata, 5–10 cm. longa, 1–2 cm. lata, membranacea, serrata, serris circiter 4 mm. distantibus, nervis lateralibus utrinque circiter 12 patulis vix prominulis. *Paniculae* terminales, confertae, 20–30 cm. longae, dense pilosae; rami laterales racemosi, usque ad 14 cm. longi; pedicelli 5–8 mm. longi, patuli, demum subreflexi, canaliculati, pilosi; bracteae minutae, dense pilosae. *Calycis* lobi 5, ovato-triangulares, obtusi, 1·5–2 mm. longi, subcoriacei, parce puberuli. *Petala* 5, lanceolata, obtusa, 5–6 mm. longa, 1·5–2 mm. lata, venosa, margine minute puberula. *Stamina* 10; filamenta basi disci inserta, alterna breviora, 2–2·5 mm. longa, basin versus sensim incrassata, glabra; antherae oblongae, 1·5 mm. longae, tenuiter pilosae. *Discus* crassus, inter filamenta undulate lobatus, minute puberulus. *Ovarium* 3-loculare, ellipsoideo-globosum, glabrum; styli connati, 2 mm. longi, glabri. *Fructus* (immaturus) clavatus, 1 cm. longus, superne 0·7 mm. diametro, leviter verrucosus.

Tropical Africa. Northern Nigeria: Yola Province: planted in towns, *Dalziel* (coll. 1909), 167.

Boswellia odorata is planted in the native towns of Yola Province, Northern Nigeria, where it was collected together with another very fine new species, *B. Dalzielii*, Hutchinson, by Dr. J. M. Dalziel, of the African Medical Service. The fragrant resin, which is a product of the plant, is burnt by the natives to fumigate their clothing, and it is also used medicinally. The Hausa name is 'Hanu': the Fufulde name is 'Andakehi.'

The nearest ally of this species is *B. papyrifera*, Hochst., which occurs in Abyssinia and the Eastern Sudan, and Chevalier has gathered what appears to be the same in the Central Chari region.—J. Hutchinson.

Fig. 1, portion of leaf showing teeth; 2, bud; 3, open flower; 4, stamens; 5, disk and pistil; 6, longitudinal section of ovary. *All enlarged.*

Tabula 2998.

PARTHENIUM ARGENTATUM, *A. Gray.*

Compositae. Tribus Helianthoideae.

P. argentatum, *A. Gray in Torr. Bot. Mex. Bound.*, p. 86, *et Syn. Fl. N. Am.*, ed. 2. vol. i. part ii. p. 245; *Fron et François in l'Agric. prat. d. pays chauds*, vol. i. pp. 105–109; *Endlich in Tropenpfl.*, vol. ix. pp. 233–247; *Hillier in Kew Bull.* 1907, pp. 285–294; *Rusby in Torreya*, vol. ix. pp. 179–180; *Lloyd, Guayule*; affinis *P. incano*, H.B.K., sed foliis longioribus plerumque acutis basi in petiolum longe attenuatis, capitulis confertis, corymbis minoribus differt.

Radix primaria descendens, superne radices laterales horizontales validas usque ad 15–20 dm. longas emittens. *Caules* fruticosi, e basi multiramosi, longitudinaliter sulcati, sericeo-incani. *Folia* ambitu spatulato-oblanceolata, basi in petiolum longe attenuata, apice acuta vel subacuta, 4–9 cm. longa, ad 3 cm. lata, plerumque in medio grosse bidentata, rarius integra vel parce denticulata, chartacea, utrinque sericeo-incana, subtriplinervia vel interdum nervis lateralibus utrinque 3–4. *Ramuli* floriferi graciles, elongati, usque ad 25 cm. longi, ad apicem breviter ramosi, nudi vel subnudi, breviter sericeo-incani. *Capitula* conferta, sessilia vel breviter pedunculata, late campanulata, ad 1 cm. diametro. *Involucri bracteae* 2-seriatae, exteriores 5, post anthesin persistentes, parum inaequales, ovatae, subobtusae, 1·5–2 mm. longae, 1–1·25 mm. latae, extra adpresse pubescentes, intra nitidae, apicem versus parce pubescentes; bracteae interiores 5, exterioribus oppositae, e bracteis 3 connatis constitutae, late ovatae, apice rotundatae, 3 mm. longae, 4 mm. latae, trinerviae, margine membranaceae, ciliolatae, utrinque glabrae vel extra leviter pilosae. *Receptaculum* parvum, paleis membranaceis oblongo-oblanceolatis 2·5 mm. longis 1 mm. latis 1-nerviis puberulis flores ♀ involventibus onustum. *Flores radii* 5, ♀, bracteis oppositi; corolla parva; tubus 0·5 mm. longus, extra pubescens; limbus circiter 1·25 mm. longus, 1·5 mm. latus, bilobus, lobis subacutis. *Achaenia* compressa, obovata, 2–2·5 mm. longa, 1·5 mm. lata, nigra, superne breviter pilosa. *Pappi setae* 3, pubescentes, duae laterales 1 mm. longae, tertia intermedia, intus spectans, brevior. *Flores disci* circiter 20; corolla tubulosa, 5-lobata; tubus circiter 1 mm. longus, superne minute pubescens; lobi triangulares, obtusi.

parce pubescentes. *Antherae* 0·5 mm. longae, apiculatae. *Ovarium* admodum rudimentarium; stylus superne minutissime pubescens; stigma capitatum.—*Synantherea mexicana*, Auct. ex Endlich in Tropenpfl. vol. ix. p. 234.

North America. Escondido Creek, south-west borders of Texas, *Bigelow*. Central America. Mexico: on the road from San Luis to San Antonio, *Parry*, 435. Coahuila State: Sierra Madre, *Palmer*, 646; Parras, *Palmer*, 566; Limestone Hills, Carneros Pass, *Pringle*, 2380; near Pachuca, Hidalgo, *Pringle*. Common at altitudes from 600–2100 m. throughout the Chihuahuan desert, Mexico.

For a comprehensive account of the Mexican rubber plant here figured, the reader is referred to Prof. F. E. Lloyd's book on the subject, entitled 'Guayule,' which was published in 1911 by the Carnegie Institute of Washington.

The *guayule* (*Parthenium argentatum*) was discovered in 1852 near Escondido Creek, Texas, by Dr. J. M. Bigelow, of the Mexican Boundary Survey. It occurs on the high plateaux from the south-western part of Texas throughout the Chihuahuan desert of Mexico as far south as Hidalgo. The plant is common on the foot-hills and slopes, especially those favoured by a southern aspect and where the soil is highly calcareous. According to Lloyd, the country through which it is distributed embraces an area of about 130,000 square miles, and he estimates that about 10 per cent. of this area carries guayule shrub.

Before its value as a rubber-yielding plant became known, the shrub was used extensively as fuel by Mexican brick-makers, and thus thousands of acres were depleted. The total original quantity of the plant in Mexico was probably about 500,000 tons, and at the rate of consumption in 1911 the natural supply would be exhausted in six to eight years. The rubber already exists as such in the cells of the plant, and its extraction cannot therefore be accomplished by bleeding, as in the case of latex-bearing plants, but by crushing with machinery and subsequent separation by various methods. The quality of the rubber is only moderate.

Reproduction is carried out by means of suckers and by seeds. The manner in which the flower-heads of *Parthenium argentatum* become dismembered is very remarkable. In each head there are two series of involucral bracts, five in each series, five female ray-flowers, and numerous disk-flowers (essentially male) in the middle, each of the last being enveloped by a palea of the receptacle. When ripe the flowers and the inner series of bracts fall away from the outer series of bracts, which is persistent on the peduncle, and each ray-flower and two of the adjacent disk-flowers and their paleae, and their subtending involucral bracts become attached to one another by concrescence and

fall away as a whole (see fig. 5). The receptacular paleae surrounding the male or disk flowers are attached at their base to a cartilaginous strand or rib on each side of the achene, and by using a little force in dissection these strands separate upwards from the base of the achene and from them hang the male flowers. The whole arrangement suggests an adaptation for distribution by wind, as the male flowers and their paleae at length become dry and shrivelled and would serve as wings; the pappus, on account of its shortness, would appear to be of little service in this respect.—J. HUTCHINSON.

FIG. 1, portion of leaf, showing indumentum; 2, hairs from the same; 3, side view of flower-head; 4, flower-head from above; 5, ray (female) flower and its two laterally attached disk (male) flowers and their connate involucral bracts; 6, disk-flower with its subtending receptacular palea; 7, ray-flowers; 8, stamens; 9, lower portion of shoot. *All enlarged except* 9.

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